What happens to the mental health of United Kingdom personnel when they return home from Afghanistan?

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King's College London

Title: What happens to the mental health of United Kingdom personnel when they return home from Afghanistan?

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Volume I

SERVICE-EVALUATION PROJECT AND MAIN RESEARCH PROJECT

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Thesis submitted in partial fulfilment of the degree of Doctorate in Clinical Psychology

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May 2012

Acknowledgements

Thank you to both of my supervisors, Neil and Patrick, for your continued support and guidance throughout this process. I have learnt a lot from both of you and am very grateful for all your input. Thank you also to each of my placement supervisors. Also, thank you to Daniel Stahl for statistics support and advice.

Thank you to Mo Fertout for your help liaising with decompression staff, and arranging and attending site visits with me; thank you Norman Jones for compiling the baseline questionnaire and report, and guidance around coding of scales. Also, thank you to Maria O'Hagan at the ACDMH for receiving baseline questionnaires and keeping me up to date with the database.

As the decompression staff collected baseline data, thank you all very much for your input. I am very grateful to all the participants who took the time to complete the research, without them, this would have been a non-starter!

To all the staff who helped facilitate data collection site visits, thank you. Specific thanks go to Alan Smith for ensuring my trip to RAF Benson was a success.

Thank you to all the TRiM staff who enabled me to attend this training. Particular thanks go to those also attending the course for providing pilot responses and also answering my many questions about military life (and endless acronyms)!

Specific thanks also go to Mark Davies, Wendy Frappell-Cooke and Jamie Hacker-Hughes for all meeting with me to discuss my study or psychology within the military; all were really informative and I am really grateful for your input.

To my fellow trainees, thank you all for making the last three years so enjoyable through your continued support and humour. Finally, thank you also to my friends and family for your support and for putting up with my preoccupied self over recent times!

SUMMARY OF CONTENTS

MAIN RESEARCH PROJECT

SERVICE EVALUATION PROJECT

Main Research Project:

What happens to the mental health of United Kingdom personnel when they return home from Afghanistan?

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Abstract

Introduction: The rates of mental illness in United Kingdom military personnel have largely been stable since operations began in Iraq in 2003. However data is often gathered at one time point so cannot measure change over time and the one longitudinal study (Fear et al., 2010) which has examined this issue found a significant increase in PTSD symptoms over time. This highlighted the need for measurement of poor mental health symptomatology at more than one time point. The current research aimed to: a. compare rates of mental ill health among military personnel upon completion of deployment and at follow up; and b. to identify any factors associated with maladjustment. **Method**: 2580 personnel completed the baseline questionnaire and 586 consented to follow up. 296 provided follow up questionnaire responses, via internet, post, or site visit. Two follow up groups were compared; those assessed between three weeks to four months post homecoming; and those assessed between four to eight months post homecoming. **Results:** Symptoms of poor mental health increased from baseline to follow up, with no difference between follow up groups. There was a significant rise in PTSD symptomatology and the prevalence of functional impairment. Greater unit cohesion, leadership satisfaction and positive family relationships were predictive of better mental health. Stigmatising beliefs regarding seeking mental health treatment were associated with poor mental health. **Conclusions:** Bolstering modifiable areas of support, such as peer and family relationships, may help to buffer adverse deployment effects. Delivering the anti-stigma message to family, peers and commanders may help increase awareness of, and reduce stigma towards, help seeking for mental health difficulties. Continued follow up research is needed to monitor if symptoms of poor mental health continue to rise and reach clinical significance.

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1 Introduction

Research into rates of mental illness and functional impairment within the military has increased over the years since the Vietnam war, particularly since 2003 with the start of the Iraq war (e.g. Hotopf, Hull, Fear, Browne, Horn, Iversen, Jones, et al. 2006); Sundin, Forbes, Fear, Dandeker, & Wessely, 2011). Various risk factors and prevalence rates for possible mental ill health have been found in research from the United States (US) and United Kingdom (UK) (e.g. Pinder et al., 2011; Sundin, Fear, Iversen, Rona, & Wessely, 2010).

The continuation of deployments to Afghanistan, and legacy of past operations, therefore justifies the need for continued research into the factors affecting mental ill health (Forbes, et al., 2011). In turn, highlighting factors which influence the rates of mental illness or functional impairment after homecoming can help to maximise individual wellbeing (Sundin et al., 2011). This is imperative at an organisational level to ensure personnel are fit for redeployment to minimise occupational impairment. This research contributes to this field and strengthens the findings of existing research monitoring the transition of service personnel returning from deployment.

The current study describes the previous research into prevalence rates of, and factors affecting, mental illness following a tour of duty. Research primarily from the US and UK shall be discussed as these nations deploy troops to a similar range of locations and professional personnel are employed on a voluntary basis, in contrast to other nations. Prior to discussing mental health and relevant literature, an overview of the UK Armed Forces (UKAF) is given below.

1.1 Background to UK Armed Forces

The Ministry of Defence (MoD) is led by the Secretary of State for Defence who is responsible for the formulation and conduct of defence policy in the UK (Services,

2012). The MoD therefore has the highest level of strategic control over the Royal Navy, the British Army and the Royal Air Force.

The Royal Navy consists of approximately 37,000 personnel (including 6000 Royal Marines Commandos - elite amphibious warfare troops). Major vessels (such as aircraft carriers or frigates) are usually commanded by Captains or Commanders whereas smaller vessels (such as patrol craft or mine hunters) are led by Lieutenant Commanders (equivalent to an Army Major). There are Royal Naval Reserve and Royal Marines Reserve personnel who provide support to the regular forces periodically.

The British Army consists of about 100,000 personnel which are organised in to regiments which have one or more battalions, each about 700 strong and most usually commanded by a Lieutenant Colonel. The battalion is broken down into companies of about 100 personnel, each commanded by a Major or a Captain. Companies are composed of three platoons (or troops) of about 30 personnel and commanded by a Lieutenant; within this there are sections of eight personnel commanded by a corporal. Regiments are formed into brigades, or larger divisions, depending on the scale of the operations they undertake. Corps (such as the Royal Army Medical Corps, the Army Air Corps or the Royal Electrical Mechanical Engineers) provide the personnel to support the brigades. British Army personnel roles include infantry, cavalry (which operate armoured fighting vehicles), artillery, medical, intelligence, logistics and engineering to name but a few. The volunteer reserve is made up of about 35,000 Territorial Army, whose personnel undertake many similar and also complimentary functions to the regular Army.

The Royal Air Force (RAF) consists of just over 40,000 personnel, who operate from bases called stations, which have a number of wings, each composed of a number

of squadrons. Most squadrons are commanded by a Wing Commander (the equivalent of a Lieutenant Colonel) and are broken down into smaller units called flights, commanded by a Squadron Leader (the equivalent of a Major). The RAF carries out numerous roles including the provision of fighter aircraft, maritime reconnaissance aircraft, heavy lift transport aircraft and helicopter support to all UK military operations. The majority of RAF personnel are not primarily involved in carrying out flying duties but in supporting the aircraft to maintain an operationally ready state. There are approximately 12,000 RAF reserves that carry out a wide range of activities to support regular RAF operations.

The majority of military operations involving substantial numbers of UK military personnel are coordinated through the Permanent Joint Headquarters (PJHQ). In order to ensure the correct skill mix is available to deal with the anticipated operational risks (which will have been assessed by PJHQ), it is normal practice for most missions to utilise personnel from all three services, however one service would lead.

1.2 Mental health difficulties in the general population

1.2.1 Depression

Depression is characterised by low mood and a loss of pleasure in activities previously enjoyed. The term covers a broad range of symptoms, due to this heterogeneity, diagnosis requires more than counting symptoms, therefore screening measures such as those used within the current study act as a guide to indicate probable caseness, for which further assessment by a clinician is warranted (National Institute for Health and Clinical Excellence (NICE), 2009).

1.2.1.1 Prevalence

The point prevalence of depression amongst 16-74 year olds in the UK in the year 2000 was 2.6% (Singleton et al., 2001). However, when a broader category of 'mixed depression and anxiety' was used, this increased to 11.4% (males 9.1%, females 13.6) (NICE, 2010).

The prevalence rate in the US population was higher, at a 12 month prevalence rate of 9.5% (Kessler, 2005).

1.2.1.2 Treatment

The NICE recommended treatment for the population as a whole for subclinical or mild to moderate depression is guided self help based on Cognitive Behavioural Therapy (CBT) principles, computerised CBT (cCBT), or a structured group physical activity programme; these are classed as low intensity interventions (NICE, 2009). The use of anti-depressant medication (ADM) is recommended for treating individuals with symptoms lasting two years or more, or who have a history of moderate to severe depression, or have mild or subclinical symptoms that have been unresponsive to previous intervention(s) (NICE, 2009).

A combination of ADM and high intensity, individual CBT or interpersonal therapy (IPT) is recommended for the treatment of moderate to severe depression (NICE, 2009).

1.2.2 General anxiety

Excessive worry and heightened tension are characteristic of anxiety, which also commonly occurs in conjunction with depression (NICE, 2009).

1.2.2.1 Prevalence

(Kessler, 2005) reported found that the 12 month prevalence rates for anxiety disorders amongst the adult US population was 18.1%. They also found that the severity of presentation was related to comorbidity, that is with increasing diagnoses came increasingly severe presentations.

Within the UK, it has been estimated that common mental health disorders, such as depression, generalised anxiety disorder (GAD), obsessive compulsive disorder (OCD) or post traumatic stress disorder (PTSD) may affect up to 15% of the population at any one time (NICE, 2011). One week prevalence rates were found to be 3% for PTSD, 4.4% for GAD and 1.1% for OCD (McManus, Meltzer, Brugha, et al. 2009).

1.2.2.2 Treatment

Treatment for anxiety depends on the particular type of anxiety disorder diagnosed, e.g. GAD, OCD or PTSD, to name a few. Psychotropic medication is commonly offered within primary care, particularly if there is a limited availability for psychological interventions (NICE, 2011). Low intensity treatments similar to those recommended for depression are utilised for subclinical or mild cases of anxiety. Moderate to severe cases are recommended individual, high intensity therapy, commonly CBT or applied relaxation (NICE, 2011).

1.2.3 PTSD

PTSD is commonly experienced after the occurrence a traumatic event whereby the individual experiences intense fear, helplessness or horror, and believed that their, or another's life or physical integrity was under threat. Symptoms include re-experiencing of the event, e.g. persistent nightmares and flashbacks; emotional numbing and avoidance of stimuli, such as thoughts or places which can remind the individual of the

traumatic event; and hyperarousal, e.g. sleep disturbance and increased startle response (Ehlers & Clark, 2000). Individuals can experience persistent symptoms for months or years after the event (Ehlers and Clarke, 2000).

1.2.3.1 Risk factors

There are a number of predictors of PTSD that can be attributed to the individual, such as personal or family history of psychiatric (particularly anxiety) disorders, and childhood abuse. There are also stressor related predictors, such as prolonged and repeated trauma, or exposure to the grotesque. The individual's subjective response can also be predictive of subsequent PTSD, such as perceived threat to life, excessively negative appraisals of the event, or mental defeat. Finally the recovery environment can be predictive of PTSD symptoms, such as health problems or further stressors (Ehlers and Clarke, 2000).

1.2.3.2 Prevalence

The Adult Psychiatric Morbidity Survey in England, (2007) found that 3% of the UK adult population had PTSD.

1.2.3.3 Treatment

The NICE recommended treatment for PTSD is individual trauma focused psychological therapy, either CBT or eye movement desensitisation and reprocessing (EMDR). Psychological therapy is favoured over drug treatment, with the latter being advised only if an individual refuses to engage in psychological therapy (NICE, 2005).

1.2.4 Alcohol misuse

1.2.4.1 Definition

Alcohol misuse occurs when it is used for a purpose inconsistent with legal or medical guidelines (World Health Organisation, 1994).

NHS recommendations are that men should not exceed three-to-four units of alcohol a day on a regular basis (every, or nearly every day) and that women should not regularly exceed two-to-three units a day (NHS Choices, 2012).

It was estimated that 5.8 million people in Britain exceed recommended daily drinking guidelines (Cabinet Office, 2004). The same report showed that 6.4 million people consume moderate to heavy levels of alcohol each week. Men drink both *more* alcohol and do so more often than women (Scottish Executive, 2005).

1.3 Occupations at risk of trauma exposure and subsequent mental health problems

Military personnel are amongst a proportion of the population who are most at risk of encountering traumatic events in the line of their occupational duties. Other occupations who also experience greater exposure to such events are war journalists (Greenberg, Gould, Langston, & Brayne, 2009); diplomats (Hibberd & Greenberg, 2011); and emergency service personnel (Misra, Greenberg, Hutchinson, Brain, & Glozier, 2009).

1.3.1 Military operational risks

Studies have increasingly focused on the potential impact of deployment on the mental health of servicemen and women since the Iraq War in 2003 (Forbes et al., 2011). Military personnel are at high risk of developing PTSD and general mental health problems, such as depression or anxiety, due to deployment to combat areas (Sundin, et al., 2011; Forbes et al., 2011; Hoge et al., 2004). Deployment can also increase the occurrence of alcohol misuse (Iversen et al., 2009).

The relationship between combat experience and psychopathology is not however straightforward, as variances have been shown between Marines versus

Infantry, regular personnel versus reserves and medical staff versus other groups (e.g. (Sundin et al., 2010; Browne et al., 2007; Jones et al., 2008).

1.4 Mental health treatment for UKAF personnel

Active service personnel can be referred by their Medical Officer (equivalent to civilian General Practitioner) to their local Department of Community Mental Health (DCMH) for mental health assessment and treatment. Each DCMH is staffed by mental health nurses (MHN), social workers, psychiatrist(s) and psychologist(s). Treatment offered follows the NICE guidelines; this service is separate to that provided by the NHS. Those in need of mental health treatment after leaving the UKAF are followed up by their DCMH for six months and then referred to appropriate NHS services.

1.5 Literature review

The purpose of the current research was firstly to compare rates of mental ill health among military personnel upon completion of deployment and at follow up; and secondly to identify any factors associated with maladjustment post homecoming. A literature search was conducted to generate relevant studies from the large evidence base available.

This search was carried out using ISI Web of Knowledge and Ovid search engines to identity studies conducted on help seeking within military personnel returning from deployment and experiencing symptomatology consistent with mental health difficulties. The search terms were: *military, post deployment, homecoming* and *help seeking*.

The search terms produced 468 results initially, so these were narrowed to gain a balance between sensitivity and specificity. Results were refined to ‘article’ or ‘other’

(not review papers), published between 2002 and 2012 and UK research, this produced a total of 32 studies. Results were then further refined to include 'mental health' as key words (as opposed to physical health primary outcomes for instance), which resulted in 26 studies. This group was refined for the final time to studies published from 2007-2012, giving a final total of 17 UK studies. This same process was repeated from the initial 468 studies, but 'US' entered as a search term rather than 'UK', which generated nine US studies to provide comparison to the UK research. The full literature review is reported in Appendix A.

1.5.1 Overview of US and UK research

The following discussion focuses on those studies generated from the literature review; however additional studies are integrated which pre-date the review or cover general risk factors for symptoms of poor mental health to provide further context for the current study.

1.5.1.1 Rates of PTSD

The rates of PTSD reported the UK studies varied from 2.7% (Jones et al., 2012) to 5.5% (Greenberg, Iversen, Hull, Bland, & Wessely, 2008). This differs to US studies, which reported post-deployment new onset PTSD to be 13.8% (Polusny et al., 2011) and 19% in those presenting for treatment (Felker, Hawkins, Dobie, Gutierrez, & McFall, 2008). US data reports higher rates of PTSD after homecoming and continued to increase over long term follow up (Hoge et al., 2004; Bray et al., 2010; Kang, Mahan, Eisen, & Engel, 2009).

UK research has shown that rates of mental illness have largely remained stable over time and rates of PTSD are generally no higher for regular deployed personnel than for non-deployed (Iversen et al., 2009). A modest increase had been shown in the

prevalence of PTSD after return from deployment, but not to the levels shown in US research (Fear et al., 2010).

Variance exists within the evidence base however, as Iversen et al. (2009) reported that US and UK rates of PTSD were similar, however Greenberg et al. (2008) found UK rates to be lower; the authors in this instance suggested this could be due to culture and operational differences. Further explanations for variance are discussed in section *1.5.1.4*.

1.5.1.2 Rates of common mental disorders

Research shows common mental disorders (CMD) to be more prevalent than PTSD, with UK rates ranging from 17.1% (Jones et al., 2012) to 27.2% (Iversen et al., 2009). This level of reporting CMD is reflected in the general UK population (Iversen et al., 2009).

In US research conducted by Felker et al. (2008) 58% of those presenting for treatment reported significant psychological distress and 35% met criteria for major depressive disorder.

1.5.1.3 Alcohol within the military

Alcohol has been associated with the armed forces for generations for serving a stress mediating role and increasing comradeship (Jones and Fear, 2011). However the nature of military roles requires alertness, high fitness levels and quick responses in novel situations, therefore the functional impairment that results from drinking to excess can be problematic for meeting task demands (Rona et al., 2010) and can cause psychological, physical and operational problems (Browne et al., 2008)

1.5.1.3.1 Rates of alcohol misuse

UK rates of alcohol misuse tended to be higher than those reported in US literature. Fear et al. (2010) found this was the only psychological disorder to increase in prevalence amongst UK personnel deployed to Iraq or Afghanistan. UK rates range from 13% (Fear et al., 2010) to 18% (Iversen et al., 2009); whereas US research rates range from 2.5% (Wilk et al., 2010) to 11% (Felker et al., 2008). Felker et al focused on those presenting for treatment, so it is possible rates are elevated in this group compared to general US military population. Bray et al. (2010) found that alcohol misuse had increased over long term follow up in US troops.

Mehlum, Koldsland, & Loeb (2006) found that the presence of PTSD symptoms was associated with higher levels of alcohol consumption before, during and after deployment; the study speculated whether this was a form of self medication for stress reactions.

Arguably, some of the factors which make an effective combat soldier, such as risk taking, also predispose them to being at risk of alcohol misuse (Jones and Fear, 2011).

1.5.1.4 Reasons for differing rates of mental health caseness between US and UK

It has been hypothesised that the differing prevalence rates between the US and UK research is due to US troops generally being younger; from lower ranks; a greater proportion reporting coming under artillery, rocket or mortar attack; comprised of a greater proportion of reservists and serve longer deployments (on average 12 months, versus six months for UK troops) (Forbes et al., 2011; Hotopf et al., 2006; Sundin et al., 2010; Mehlum, Koldsland, & Loeb, 2006).

1.5.2 Limitations of existing research

1.5.2.1 Self report data

The majority of research involving military samples utilises self report in order to gather mental health outcomes e.g. Browne et al. (2007); Frappell-Cooke et al. (2010); Iversen et al. (2008); Peterson et al. (2010); Wilk et al. (2010). This is often the most time efficient, cost effective method for gathering the largest possible sample size in order to generate representative data, however does have its own specific limitations.

There may be bias in responding due to demand characteristics, such as reporting favourable outcomes at the end of TRiM intervention (Frappel-Cooke et al., 2010). Symptoms of PTSD can be overinflated due to ascribing symptoms of general anxiety to those of PTSD (Fear et al., 2010; Polusny et al., 2010), as subjective interpretation of measures is required (Frappell-Cooke et al., 2010). Stigma towards expressing mental health concerns and fears of data not remaining confidential could also bias results as respondents may minimise symptom reporting as a result of stigma beliefs (Jones et al., 2012).

Due to potential interpretation bias (e.g. Kehle et al., 2010) data gathered from self report measures can only indicate *probable* caseness rather than clinical diagnoses (Du Preez et al., 2012). The benefit of self report over clinical interview is that larger sample populations can be accessed; to generate diagnoses from such samples would require the use of formal clinical interview. These examples highlight the potential for both false positives and false negatives when using self report measures (Peterson et al., 2010). However Kang et al. (2009) verified 93% of self reported mental health caseness with objective medical records; therefore self reporting bias may not be a universal limitation.

Self report measures are useful within a military population due to practical considerations such as the mobile nature of the population, time and economic resources (Fear et al., 2010). However it should remembered that conclusions from such measures are indicative of possible or probable caseness, rather than a formal clinical diagnosis.

1.5.2.2 Self selecting samples

Samples that are self selecting may differ characteristically from those who do not participate, such as those choosing to complete a TRiM training course may have more of an interest in addressing mental health difficulties than those who do not take part (Gould, Greenberg and Hetherton, 2007).

Also, follow up research samples are based on availability as a proportion of participants may have redeployed, changed bases or left the military, which limits potential responders to those who are both available and choose to participate.

1.5.2.3 Cross sectional study designs

Military studies often use a cross sectional design to measure participant responses at one time point. This is advantageous as often large numbers of personnel are recruited for which comparisons can be made across groups e.g. across ranks and differing levels of combat exposure (Iversen et al., 2008). Cross sectional research does not allow for a direction of causation to be determined (Iversen et al., 2008; Iversen et al., 2009; Harvey et al., 2011; Sundin et al., 2011; Jones et al., 2008). An example of this difficulty is determining whether low mood reduces unit cohesion, or if low unit cohesion causes low mood (Browne et al., 2007). However, Greenberg et al.

(2008) highlight that although cross sectional research does not determine causation, it does provide a valid measure of association.

Cross sectional data from one time point also does not allow change to be measured over time. For instance, the effects of natural recovery, delayed onset, worsening of symptoms, treatment, or maintenance of intervention effects post deployment cannot be measured at a single time point (Gould et al., 2007; Kehle et al., 2010; Peterson et al., 2010). As Fear et al (2010) reported a gradual increase in PTSD symptoms over follow up, this highlights the potential for delayed onset of PTSD symptoms.

1.5.2.4 Longitudinal data

Although longitudinal data is advantageous over cross sectional as it measures change over time, it is also subject to limitations as subject attrition in prospective studies can decrease the generalisability of data (Bray et al., 2010). Recall bias in retrospective studies can also bias results, for instance Greenberg et al. (2008) highlighted that participants were recalling events from 10 years prior in some instances, which can result in recall inaccuracies.

1.5.2.5 Determining functional impairment

Although probable mental health caseness is indicated through mental health outcomes, a measure of functional impairment is often not included within existing research (Iversen et al., 2009). That is, meeting criteria for caseness might not result in impairment within daily functioning such as maintaining occupation and relationships, therefore seeking help in this instance may not be appropriate. Measures used in previous research, such as the PHQ-9, do not distinguish between those meeting

caseness with and without functional impairment (Iversen et al., 2010). In order to make this distinction, specific functional impairment items should be added in addition to formal mental health measures. However, the PCL-C does record high sensitivity and specificity (.82 and .83 respectively) therefore showing the number of false positives or negatives identified by this scale is low (Iversen et al., 2010).

1.6 Variables effecting mental health difficulties

1.6.1 Deployment

Deployment has been linked to increased alcohol misuse in regular UK service personnel (Fear et al., 2010). Those deployed to a forward operating area had an increased risk of PTSD symptoms (Iversen et al., 2008).

Duration, but not number, of deployments was significantly associated with PTSD symptoms and rates of alcohol misuse in UK service personnel (Rona et al., 2007). US research showed that the time between deployments affected rates of PTSD and that by having more time in between each deployment relative to an individual's first tour length could reduce rates of PTSD (MacGregor, Han, Dougherty, & Galarneau, 2012).

1.6.2 Occupational group

The effect of combat exposure on rates of symptom reporting is not directly linear, as rates of mental health difficulties differ between military occupational groups. For instance, Royal Marine Commandos (RMCs) reported lower rates of mental health difficulties than regular infantry personnel, despite greater combat exposure (Sundin et al., 2010; Iversen et al., 2009). Sundin et al. (2010, 2011) proposed that this resulted from a greater level of preparedness amongst RMCs due to their highly specialised training, rigorous selection, and greater levels of unit cohesion.

Combat personnel are more likely to report PTSD symptoms and drink greater quantities of alcohol (Hotopf et al., 2006; Fear et al., 2010).

Jones et al. (2008) found that medical personnel reported more psychological distress than other military occupational groups and made greater use of medical services than non-medical personnel. The authors proposed that this resulted from greater levels of traumatic event exposure and lower reported levels of cohesion amongst the medical group. The effects of cohesion on mental health are explored further in section *1.6.6*.

Peterson et al. (2010) supported the non-linear relationship between combat exposure and PTSD as noncombatants in Iraq were six times more likely to report PTSD symptoms than noncombatants in Qatar. Peterson et al. therefore highlight the need for regular assessment of all deployed personnel, as all are at risk of possible psychopathology, not just those engaged in direct combat.

1.6.3 Regular or reserve personnel

Deployment has been associated with an increased risk of PTSD amongst UK reserve personnel (Fear et al., 2010). Reservists generally report higher levels of PTSD symptomatology than regular personnel (5% and 4.2% respectively) (Forbes et al., 2011; Harvey et al., 2011). Iversen et al. (2009) found this increase was related to greater self reported exposure to traumatic experiences and greater perceived threat to self amongst reserve personnel.

There was no effect of deployment for influencing PTSD rates amongst regular personnel (Iversen et al., 2009).

1.6.4 Rank

Lower rank has been associated with greater incidence of PTSD (Iversen et al., 2008). Greenberg et al (2008) also found officers reported lower levels of PTSD than junior ranks.

1.6.5 Gender

Women were found to report more psychological distress and chronic fatigue than men; however alcohol misuse was more common among men (Rona et al., 2007).

1.6.6 Unit cohesion and leadership satisfaction

Cohesion refers to "emotional bonds of mutual trust and commitment which underpin any activity" (King, 2006, p.641) and has been highlighted as an important factor influencing combat effectiveness and performance.

Low unit cohesion is an identified risk factor for PTSD symptoms (Iversen et al., 2008; Jones et al., 2012). Du Preez et al. (2012) found that when personnel felt well informed about their unit operations, had high unit cohesion and more perceived interest from superiors, the rates of probable PTSD and CMD decreased.

Mulligan et al. (2010) reported that good cohesion and leadership can be protective when exposed to high threat, combat situations, as close-knit units had better mental health in spite of regular danger. This is supported by the RMC research previously highlighted.

High comradeship is not always linked to lower rates of mental health symptomatology however as Du Preez et al. (2012) highlight a link between high cohesion and greater levels of alcohol misuse.

Reserve personnel reported lower levels of unit morale and cohesion (Harvey et al., 2011), which may also account for the greater levels of PTSD symptomatology amongst this group. The civilian life reservists leave behind may also affect functioning, perhaps with employers or family not fully supporting their military role and deploying with an unfamiliar unit (Hotopf et al., 2006).

Murphy & Sharp (2011) found that military factors had a larger effect on morale than pre-enlistment factors. Childhood adversity was related to low perceived comradeship and not feeling that senior ranks were interested in what the individual did or thought. Murphy and Sharp hypothesised that adverse experiences in childhood which resulted in lost schooling or having an unstable home base and insecure family attachments could affect one's ability in adulthood to forge bonds with other unit members and be part of a cohesive unit.

1.6.7 Social support

Doyle & Peterson (2005) found that peer isolation, estrangement from family and friends, spouse relationship and resuming roles were all associated with poorer transition after homecoming.

Lack of perceived support from the military and lack of non-military social support were both related to higher rates of PTSD, CMD and alcohol misuse (Harvey et al., 2011).

Low social support was an identified risk factor for PTSD by Iversen et al. (2008). This effect was independent of prior mental health (Rona et al., 2009) which emphasises the importance of *post* deployment screening.

1.6.8 Background

1.6.8.1 Childhood adversity

Research from both military (e.g. Iversen et al., 2008; (King, King, Foy, & Gudanowski, 1996) and civilian (e.g. Ehlers & Clark, 2000) samples has shown a strong link between the presence of childhood adversity and later PTSD.

Pre-enlistment vulnerabilities are common in the UKAF and are associated with poorer psychological health, such as increased risk of PTSD, general mental ill health, self harming behaviours and heavy drinking (Kessler, Davis, & Kendler, 1997; Browne et al., 2008).

Military personnel may show more sensation-seeking and impulsive traits than the general population, which are advantageous particularly when completing a combat role; such traits have also been shown to be associated with pre-enlistment vulnerabilities (Brodsky et al., 2001). Macmanus et al. (2011) highlight that due to the rigorous selection and training process for the military, those who do not show controlled aggression are not recruited; roughly one third of recruits do not meet this criteria.

Research on childhood adversity may help to identify which personnel may be more vulnerable to psychological problems due to their pre-enlistment history so appropriate support systems can developed for such individuals (Iversen et al., 2007).

1.6.9 Help seeking

Iversen et al. (2010) reported that only 23% of those with CMD were seeking help from a medical professional, therefore the majority of personnel who were experiencing CMD were not accessing help for it. This pattern was reflected by Kehle

et al. (2010) who found that over 50% of those screening positive for mental health caseness were not receiving treatment. 'Mental health literacy' (Jorm et al., 1997) is therefore important to help raise awareness and recognise symptoms of mental disorder (Iversen et al., 2010).

Iversen et al. (2010) found that objective evidence from screening measures predicted help seeking for veterans, but did not predict help seeking for currently serving regular or reserve personnel. This suggests that the most unwell are not necessarily the most likely to receive treatment, despite such help being available (Iversen et al., 2010).

Iversen (2010) found that non-medical sources of help, such as chaplains, were consulted more widely than health professionals. Greenberg et al. (2008) also found that military peacekeepers most commonly turned to *informal* support networks. This highlights a reluctance to disclose mental health concerns to health professionals or military superiors. Therefore utilising informal support networks in mental healthcare promotion and delivery may help to increase future help seeking.

1.6.10 Stigma

Stigma has been defined as *an attribute that is deeply discrediting"* (Goffman, 1963, p.3) and there is a well documented link between this and a reluctance to seek help for mental health difficulties. Britt (2000) found that within a military sample, participants reported that admitting to a psychological problem was more stigmatising than a medical problem and for this reason were less likely to attend a psychological referral over a medical one.

Gould et al. (2010) reported that UK, US, Canadian, Australian and New Zealand (NZ) armed forces all showed similar levels of stigma and perceived barriers to

care. The most commonly reported stigmatising concerns were that ‘my unit leadership might treat me differently’ and ‘I would be perceived as weak’ (Gould et al., 2010, p.152). These concerns were reflected by Jones, Burdett, Wessely, & Greenberg (2011) as the most commonly reported stigmatising belief regarding reporting mental health difficulties was being treated differently by commanders.

Those with the highest stigma levels were also those with highest mental health scores (apart from NZ) (Gould et al., 2010). This result was supported by Hoge et al. (2004) as participants with anxiety or depression were two times more likely to report stigmatising beliefs than those with no mental health symptomatology. Greene-Shortridge et al. (2007) proposed that the cognitive distortions associated with mental ill health can increase stigma and that those meeting criteria for caseness are already likely to be considering the negatives of help seeking.

Langston et al. (2010) found a similar pattern of responses in their study of UK Navy personnel, as the most highly distressed endorsed the strongest stigma beliefs. In addition, only half of UK military veterans reporting problems sought help while in service (Iversen et al., 2005).

Personnel from more junior ranks have been found to endorse stronger stigma beliefs than senior personnel (Greenberg, Langston, Iversen, & Wessely, 2011). Given that mental illness symptomatology has been shown to have an inverse relationship with rank (Iversen et al., 2009), this may highlight a group to target for anti-stigma campaigns.

Externalising stigma beliefs to others was less common in Langston’s study, whereas internal beliefs about how one would be perceived and treated by others was

common; this was also shown by Iversen et al. (2005). This suggests a shift to some extent within the military culture, which historically enforces strong, masculine norms (Langston et al., 2010).

Lower reported levels of stigma have also been associated with greater unit cohesion and positive leadership from unit superiors (Wright et al., 2009), this indicates that stigma can be addressed at a unit as well as an individual level.

1.6.10.1 Effects of stigma in US samples

Research has suggested that, although stigma is present, the US culture may be more accommodating of reporting symptoms of mental ill health (Forbes et al., 2011). There is also an extension of service provision for those experiencing psychopathology in the US, which may provide a greater incentive to reporting such symptoms and benefitting from this allowance, whereas UK personnel are entitled to lifetime public health care from the NHS (Forbes et al., 2011).

1.6.10.2 Methodological implications of stigma

Pinder et al. (2011) proposed that the use of self report measures within a military population may be subject to additional bias in under or over reporting symptoms due to perceived stigma. For instance, individuals may underreport symptoms due to their sociocultural context and fitness-for-duty concerns. However, self report may be a better indicator of prevalence rate when compared to hospitalisation data for instance, this may be under-representative due to relatively low proportions of personnel accessing treatment (Pinder et al., 2011).

1.6.11 Transition

Personnel require support through the process of returning from deployment as research has shown that rates of mental illness can increase during the first few months of return (Milliken, Auchterlonie & Hoge, 2007). The importance of post-trauma environment has also been shown in civilian studies (Brewin et al., 2000).

(Adler, Britt, Castro, McGurk, & Bliese, 2011) developed a measure of transition to measure both the positive and negative aspects of transition and found four distinct factors: benefit; appreciation; alienation or anger; and remorse or guilt. Negative transition experiences were related to number of combat experiences, after controlling for PTSD. Adler et al. (2011) highlight the negative factors of anger and alienation were separate to reported PTSD symptoms; therefore it is important not to overlook such factors with a specific focus on PTSD.

1.7 Interventions

1.7.1 Reducing stigma

An educational program to reduce stigma has been introduced in the US with soldiers and their families. The subsequent randomised controlled trial (RCT) results indicated combat troops' stigmatising beliefs had significantly reduced post intervention (Adler, Castro, & McGurk, 2009). A UK version of this program found no significant effect on stigma beliefs however (Mulligan et al., 2012). Fertout et al. (2011) suggested in order to reduce stigma, various long-term strategies need to be applied, such as organisational policies, assessment and early outreach services.

1.7.2 Reducing alcohol misuse

As drinking is entrenched within military culture it has been argued that interventions to address problem drinking should be targeted at the military population in general, rather than focusing solely on individual personnel (Browne et al., 2008). One such initiative is the controlled re-introduction to alcohol for all personnel returning from Afghanistan during decompression (Fertout et al., 2011). Decompression is discussed further in section *1.7.3.1*.

Jones and Fear (2011) proposed that models similar to those used by charities could prove effective within a military population, by using service personnel and veterans who have recovered from alcoholism to talk to and work with current personnel. It has been argued that this would hold greater validity with service personnel, in comparison to a health professional with whom they may identify with to a lesser extent (Jones and Fear, 2011).

1.7.3 Post Operational Stress Management

Post Operational Stress Management (POSM) has been introduced by several nations to help mitigate the potential adverse effects of deployment (Fertout et al., 2011). The aim is to ease the individual back in to their home life and to provide psychosocial interventions. Routine screening of homecoming troops is also undertaken by countries such as the US, Canada and Australia, although this is not current UK policy (Fertout et al., 2011); however a screening trial within the UK was recommended by Murrison (2010).

Research has shown that post-deployment support for troops needs to be multidimensional, involving cooperation from the CoC, medical and welfare staff (Harrison, Sharpley, & Greenberg, 2008).

POSM is classed broadly in three stages: primary prevention; early detection; and treatment of established ill health (Fertout et al., 2011).

1.7.3.1 Primary prevention: Decompression

Decompression is a primary prevention strategy and is the term used for military personnel's gradual adaptation from deployment to the home environment with the aim of "reducing the potential for maladaptive psychological adjustment" (Hacker-Hughes et al., 2008). Troops can collectively 'unwind' after completing their tour together (Jones et al., 2011).

Canada, France and the UK have developed a Decompression programme, with Australia and the US considering development (Fertout et al., 2011). This shows the commitment the different militaries are making to help mitigate negative health outcomes as a result of deployment and the transition process.

The UK definition of Decompression is:

> "…placing groups into a structured and critically monitored environment in which to begin winding down and rehabilitating to a normal, routine, peace-time environment. It allows time to begin rationalising thoughts about what has been left behind in the operational setting and to think about normal service and family life." (British Army Post Operational Stress Management Policy, 28 September 2005).

British personnel take part in 'Third Location Decompression' (TLD), which is held in the Sovereign Base Area (SBA) in Cyprus. There is a structured programme which typically runs from 24-36 hours and includes psychoeducational briefing sessions and recreational activities (Fertout et al., 2011). Vulnerable individuals can also be identified and monitored at decompression and a subsequent mental health referral if

necessary (Hacker-Hughes et al., 2008). Individuals are routinely surveyed at decompression to measure the presence of psychological distress as well as to gain demographic data. Decompression is a mandatory activity and is viewed as part of the operational tour, rather than an addition to it (Fertout et al., 2011).

1.7.3.1.1 Effectiveness of Decompression

Research conducted on the perceived utility of decompression from the troops' perspective has shown that although only 21% of personnel wanted to complete it prior to arrival, 91% reported that they had found it helpful on completion (Jones et al., 2011). This research also showed that lower rank, having a combat role, greater number of tours completed and higher levels of stigma were all associated with lower perceived helpfulness of decompression. However, all personnel reported that the psychological briefings were helpful, regardless of whether they were experiencing post traumatic stress symptoms or not (Jones et al., 2011).

1.7.3.2 Secondary prevention

This level of intervention involves early detection and often includes psychoeducational programmes on topics such as PTSD, depression, alcohol misuse and normal deployment stress (Fertout et al., 2011).

1.7.3.2.1 Trauma Risk Management

One such intervention introduced in the UK is that of Trauma Risk Management (TRiM) (Greenberg et al., 2010). TRiM aims to keep organisational employees functioning after traumatic events through a peer delivered post-incident risk assessment (Greenberg et al., 2010). TRiM is used by emergency services and government

organisations as well as the military, thereby showing its adaptability with different populations (Greenberg et al., 2010).

TRiM practitioner training is conducted over three-to-five days and is open to personnel from all ranks. Individuals are trained in a basic level of trauma psychology and in carrying out a post-incident psychological risk assessment (Greenberg et al., 2010). A TRiM interview is carried out by a TRiM practitioner with affected personnel immediately post incident, then repeated four weeks and three months later to identify any problems that may emerge and ensure that they are dealt with promptly (Fertout et al., 2011). Those needing extra support can then be referred on to the appropriate tertiary prevention service, i.e. medical or mental health (Greenberg et al., 2010).

1.7.3.2.2 Effectiveness of TRiM

Frappell-Cooke, Gulina, Green, Hacker Hughes, & Greenberg (2010) found that RM and Army personnel deployed in units with experience of using TRiM reported less psychological distress than personnel in units using TRiM for the first time. Individuals were surveyed pre, during and post-tour and indicated fewer symptoms of psychological distress than personnel not involved in TRiM (Frappell-Cooke et al., 2010). The authors concluded that TRiM helped bolster psychological resilience amongst personnel.

TRiM also facilitates social support (Greenberg et al., 2010) and as previously discussed, there is a well documented link between social support and mental health, therefore TRiM is both an effective and widely applicable process. Gould et al. (2007) supported these findings as their research concluded that TRiM reduces stigma and increases help seeking.

Qualitative research has also been conducted into to views of Royal Navy personnel with regards to TRiM (Greenberg et al., 2011). 81% of this sample reported mainly positive views about the intervention, citing that it was both relevant to their needs and useful because it was peer-delivered. The respondents expressing negative views were concerned about confidentiality, that the TRiM practitioners would be inexperienced and that there was a lack of support for the intervention from leaders (Greenberg et al., 2011).

The acceptability of TRiM to date may be helped by the fact it is delivered by peers who are culturally sensitive to the working environment within which the trauma occurred (McLeod and Henderson, 2003). To help its continued acceptability, Greenberg et al. (2011) highlight the importance or careful selection of TRiM practitioners and continued public support of the programme by junior and senior managers.

1.7.3.3 Tertiary prevention

This involves the direct treatment of mental health difficulties by trained healthcare staff (Pinder et al., 2010). Treatment follows the NICE guidelines as outlined in sections *1.2.1.2; 1.2.2.2; 1.2.3.3*.

1.8 Hypothesis generation

Previous UK research has indicated that the rates of PTSD have remained stable and are no higher for deployed personnel than for non-deployed (Iversen et al., 2009). However, Fear et al. (2010) found a significant rise in PSTD symptom reporting over follow up which indicated the need for continued surveillance of this cluster of symptoms in future research. Fear et al. (2010) suggested examination of mental health

outcomes following an initiative such as decompression to identify future trends in psychopathology and if attendance at such a program has an effect of rates of poor mental health.

Rates of CMD have been consistently higher than those of PTSD in previous research (e.g. Iversen et al., 2009; Jones et al., 2012). Although Fear et al. (2010) did not find a significant rise in CMD, it would prove informative in the current research to identify if a potential rise in symptom reporting is restricted to PTSD, or encompasses symptoms of depression and general anxiety also. Previous research commonly measures symptoms of mental ill health at one time point (see section *1.5.2.3*) and therefore cannot identify change over time. Fear et al. (2010) identified that symptoms of poor mental health could accumulate over a follow up period and show delayed onset. Therefore measurement of post-deployment symptom change over follow up is important to identify what factors, if any, are related to adjustment into a non-combat environment and symptoms of mental ill health. Once modifying factors have been reliably established, post deployment support can be altered if needed to help reinforce such factors.

There is a well documented link between stigma endorsement, reluctance to seek help and poor mental health, often measured at a single time point, again it would be useful to highlight if this relationship changes over the transition period. Given the accepted link also between unit cohesion, leadership satisfaction, social support, and mental health symptomatology (e.g. Iversen et al., 2008; Du Preez et al., 2012), measurement of any change in this relationship over the follow up period would help inform future research and support planning as these factors are potentially modifiable.

Examination of the most predictive variables for subsequent mental ill health from operational to interpersonal factors may help to identify where to target support. For instance, if potentially modifiable factors such as relationship difficulties with own children are found to be predictive of subsequent mental ill health this suggests an area of support which can be developed. Whereas if static factors, such as childhood adversity are shown to be most predictive of subsequent mental ill health, this would highlight that a different focus may need to be taken to support post-deployment transition.

1.9 Hypotheses

After reviewing the current literature, the following hypotheses were generated to test:

1. Deployed personnel will show gradual improvement over time in their emotional well being as shown in a variety of outcomes: PTSD, anxiety, depression, common mental disorder, adjustment, family relationships, sleep and alcohol use
2. Poor mental health symptoms at baseline and follow up will be predictive of greater endorsement of stigma beliefs at baseline and follow up
3. Symptoms of poor mental health at baseline will be a strong predictor of poor mental health symptoms at follow up
4. Better mental health at baseline and follow up will be predictive of higher unit cohesion and leadership satisfaction at follow up. Higher unit cohesion and leadership satisfaction will be predictive of better mental health at follow up.
5. Higher levels of combat exposure or operational exposure will be predictive of greater levels of unit cohesion and satisfaction with leadership

6. Rank (measured at baseline) will be predictive of stigma endorsement (measured at baseline and follow up), mediated by symptoms of poor mental health
7. Baseline symptoms of poor mental health will be predictive of problematic adjustment and difficulties with family relationships at follow up
8. Greater childhood adversity will be the strongest predictor of poor mental health at baseline and follow up.

2 Method

2.1 Design

A two stage (baseline and follow up) procedure was employed. All participants completed measures at baseline and once at follow up. Baseline participants then indicated if they wished to be followed up after homecoming. Half of those consenting to take part in the follow up stage were contacted after three weeks and up to four months after homecoming. The second half of consenters were contacted between four and eight months after homecoming; comparisons from each follow up group were made.

The rationale for choosing this design was that participant retention in repeated measures longitudinal designs with a military population is problematic. Fear et al. (2010) achieved a 56% response rate over a two year period; Frappell-Cooke et al. (2010) achieved a 54% response rate one week post deployment; the US-based Millennium Cohort study had a 36% response rate (Smith et al., 2008); and Hoge et al. (2004) obtained a 58% response rate.

Reasons for low retention rates may include work and training commitments (Hoge et al., 2004); the mobile nature of this population, for instance post deployment leave and subsequent redeployment; and the predominance of young men within the population, who are characteristically less likely to participate in research (Fear et al., 2010).

2.2 Power analysis

In order to determine sufficient power to detect a small to medium within group effect size of 0.25 in relation to the first hypothesis, with 80% power ($p < .01$, two

tailed), a sample size of 191 was required. We over-sampled to account for participant attrition from baseline to follow up.

2.3 Participants

All participants were serving military personnel who had completed a Tour of Duty in Afghanistan and were returning home via Decompression at Bloodhound Camp in Akrotiri, Cyprus. Participants were either members of the Royal Navy (RN), Army, Royal Air Force (RAF) or Royal Marines (RM). Full time personnel, reserves and all ranks were approached to take part in the research. Figure I outlines the breakdown of ranks for each organisation.

Figure 2.I. Participant Ranks

Rank	Navy	Army	RAF	RM
Lower rank	Able Seaman	Private	Aircraftman/Leading Aircraftman/Junior Technician	Marine
	Leading Hand	Lance Corporal to Corporal	Corporal	Lance Corporal to Corporal
Non-Commissioned Officers (NCO) & Warrant Officer (WO)	Petty Officer to Warrant Officer 1 (WO1)	Sergeant to Warrant Officer 1	Sergeant to Warrant Officer	Sergeant to Warrant Officer 1
Officer	Midshipman to Lieutenant Commander	2nd Lieutenant to Major	Pilot Officer to Squadron Leader	2nd Lieutenant to Major
	Commander & above	Lieutenant Colonel & above	Wing Commander & above	Lieutenant Colonel & above

2.3.1 Inclusion and exclusion criteria

Inclusion criteria were that participants must be serving military personnel, completing an operational tour in Afghanistan, whether regular or reserve forces.

There were no specific exclusion criteria, however as participants were recruited at decompression, non-completers or those exiting theatre without going via decompression were not approached for the research and were therefore indirectly excluded from participation.

2.4 Ethical Approval

Ethical approval was granted from the King's College London Psychiatry Nursing and Midwifery Research Ethics Committee (PNM RESC) for the follow up stage of the study on March 11th 2011, reference number PNM/10/11-64. The Ministry of Defence Research Ethics Committee (MoDREC) also granted approval on 30th March 2011, reference number 204/Gen/11. MoDREC granted ethical approval for the baseline stage on 21st February 2011, reference number 0834/189.

2.5 Informed Consent

Personnel were approached regarding baseline stage participation by specific decompression staff and were asked to read the information sheet and consent forms (see Appendix B for a copy of the baseline information sheet and consent form). Those who provided follow up details indicated their consent to be contacted for the follow up stage of the research. Details required for follow up contact were full name, email address and/or telephone number. The individual's service number and unit address were also collected to allow for data collection via a site visit (see *'procedures'* section for details of site visits) if appropriate.

Participants could complete the baseline stage and opt out of the follow up stage by ticking the relevant box; those who did not consent to complete either stage simply did not complete the response booklet.

Follow up consenters were emailed the follow up information sheet and consent form as an attachment to an email which contained the online survey link. The email clearly stated that participants should read the attached information sheet and consent form and only complete the questionnaire should they consent to take part. See Appendix C for the follow up information sheet and consent forms. The Principal Investigator's contact details were included in the information sheet in case of additional queries regarding the research and contact details for the Independent Medical Officer, who could advise an individual's termination in the study, if necessary, and provide advice regarding medical queries. Therefore implied consent was taken, as non-consenters did not respond to the survey.

If participants did not wish to complete the follow up questionnaire there was a link that they could follow to indicate that they did not wish to complete the questionnaire, or they simply chose not to respond.

2.6 Prize draw entry

On both the baseline consent form and the first page of the follow up questionnaire, participants could opt in to a prize draw to win one of 15 2G 'iPod Shuffles'. Participants were entered only once into this draw, the draw was held after all the baseline responses and the majority of follow up responses had been gathered. For the winners who had consented to follow up, but not yet completed the follow up questionnaire, they were sent their iPod with the follow up questionnaire, information sheet, consent form and pre-paid return envelope enclosed to facilitate responding.

2.7 Questionnaire Measures

The following measures were selected because they are valid, reliable and efficient means of accessing data within this population. Unless otherwise referenced,

the measures used were developed by ACDMH and KCMHR researchers and have been used in previous research completed by the centre; therefore these scales, as well as those used developed for use within the general population, have all been well validated with a military population.

2.7.1 Baseline Questionnaire

The baseline questionnaire was designed as a screening measure for general mental health symptoms to indicate possible anxiety or depression caseness and probable PTSD; it also included a number of deployment specific questions. In line with the principles of screening, the questionnaire was short, quick to complete and easy to understand. Goldberg and Williams (1988) highlight that questionnaires measure caseness using a health-sickness axis, as opposed to a sharp dichotomy between 'caseness' and 'normality'. A pre-determined threshold score identifies at what point an individual exceeds the 0.5 probability that the symptoms they are experiencing indicated psychiatric caseness.

As baseline participants had just completed an operational tour, the screening principles were particularly pertinent so respondents were not overly fatigued, helping to maximise response rate. The baseline questionnaire was designed to take approximately 10 minutes to complete. See Appendix B for a copy of the Baseline questionnaire.

2.7.2 Description of baseline measures

The baseline questionnaire measured general demographics such as rank, marital status and number of previous tours completed. A measure of combat exposure was also included.

The baseline questionnaire assessed respondent's experiences of decompression to gather data for a parallel study being run by researchers at the ACDMH to measure their experiences, attitudes and evaluative comments to inform how decompression can be improved or adapted in the future, if required.

The baseline questionnaire contained a 'health' section, which included the PCL-C, GHQ-12, GAD-2, PHQ-2, a sleep scale and a measure of stigma in relation to seeking mental health treatment. The measures were selected because they are reliable, valid and efficient methods of assessment. The scales had all been used extensively with a military sample and completed both at decompression and in the UK, post deployment, and are therefore validated with large numbers of military personnel.

2.7.2.1 PCL-C

Probable PTSD symptoms were measured using the 17-item National Centre for Post Traumatic Stress Disorder Checklist, civilian version (PCL-C) (Blanchard et al., 1996). The PCL-C has sensitivity and specificity values of 0.94 and 0.86 respectively when using a cut off of 44 (Blanchard et al, 1996). This study also found the PCL-C to have a positive predictive power of 0.85 and a negative predictive power of 0.95; an overall diagnostic efficiency of 0.90; and internal consistency (Cronbach's Alpha) of 0.94 (Blanchard, Buckley and Forness, 1996). These values show the PCL-C to be effective in measuring rates of probable PTSD symptomatology. In the current study, the Cronbach alpha coefficient was .881 for PCL-C at baseline and .907 for PCL-C at follow up.

A score of 30 on the PCL-C was used as the cut off for the presence of PTSD symptoms, as this level has indicated functional impairment within a military sample (e.g. Rona et al., 2009).

2.7.2.2 GHQ-12

The GHQ-12 (Goldberg & Blackwell, 1970) is a well validated measure of psychiatric disturbance, originally a 60 item measure, the GHQ-12 has been used extensively in general research populations and specifically with a military sample, using a cut off score of four or more to identify the presence of psychiatric disturbance (e.g. Iversen et al., 2009). The GHQ-12 has a split-half reliability of 0.95 (Goldberg & Williams, 1988) and test-retest reliability ranging between 0.51-0.90 when tested on three different groups, six months apart (Goldberg & Williams, 1988). Validation studies of the GHQ-12 revealed sensitivity and specificity medians of 86 and 80 respectively. The positive predictive value of the GHQ-12 at a prevalence rate of 30% is 0.65. These figures all show the GHQ-12 to be a robust and effective measure in assessing rates of general mental health difficulties. In the current study, the Cronbach alpha coefficient for the GHQ-12 at baseline was .791 and for the GHQ-12 at follow up it was .704.

2.7.2.3 GAD-2

The two item General Anxiety Disorder scale (GAD-2) (Kroenke, Spitzer, Williams, Monahan & Lowe, 2007) assesses core anxiety symptoms using the first two items of the GAD-7 (Spitzer et al., 2006) and has been shown to be a successful screen for anxiety disorders (Kroenke et al., 2007). It was used in the current study to assess presence of possible anxiety. The GAD-2 has been shown to have sensitivity and specificity values of 0.95 and 0.64 respectively (95%CI), with a positive likelihood ratio of 2.6 (95%CI) (Kroenke et al., 2007). In the current study, the Cronbach alpha coefficient was .540; this is arguably due to the presence of only two items within the scale. The mean correlation between the items in the current study was .371.

2.7.2.4 PHQ-2

The two item Patient Health Questionnaire (PHQ-2) (Löwe, Kroenke & Grafe, 2005) is a brief measure of depression which measures both severity of symptoms and change over time. When measuring any depressive disorder, Löwe et al. (2005) reported sensitivity and specificity values of 0.79 and 0.86 when using a cut-off of 3 and a likelihood ratio of 2.7. This study also showed the PHQ-2 to have diagnostic accuracy of 0.89, which is similar to the Hospital Anxiety and Depression Scale (Löwe et al., 2005). Again, these figures highlight that the PHQ-2 has been shown to be an effective screening tool, which can highlight cases of possible depression for follow up.

In the current study, the Cronbach alpha coefficient for the PHQ-2 was .685; this is again, possibly due to the presence of only two items within the scale. The mean correlation between the items was .524.

The PHQ-2 items were taken from the PHQ-9 measure at follow up to allow scores at baseline to be compared to follow up; the follow up PHQ-2 Cronbach alpha coefficient was .755.

2.7.2.5 Sleep scale

The sleep scale was developed by ACDMH staff during the March 2010 Decompression and the ACDMH 'Battlemind' Study (Mulligan et al., 2012). The four item sleep measure at baseline in the current study had a Cronbach alpha coefficient of .841.

2.7.2.6 Stigma scale

The stigma scale was developed by ACDMH staff during the March 2010 Decompression and the ACDMH 'Battlemind' Study (Mulligan et al., 2012). Stigma can be both internally or externally focussed; either beliefs about seeking personal help

for a mental health problem; or beliefs about how other people who suffer from mental health problems should be and are treated. Therefore the stigma scale included items to measure each of these variations. In the current study, the Cronbach alpha coefficient for the seven item baseline stigma measure was .880.

2.7.3 Follow up questionnaire

The follow up questionnaire was completed by participants via a hyperlink within the main email text. The questionnaire was run on the King's College London (KCL) e-survey software package 'SelectSurvey.NET'. This is a free package for KCL staff and students to use. Responses were exported directly from this site in to SPSS for data analysis. The follow up questionnaire was longer than the baseline as it was more appropriate to gather a larger data set at this time as participants were less likely to be less fatigued than they would have been at baseline. The follow up questionnaire was designed to take 15-20 minutes to complete. See appendix D for the follow up questionnaire.

2.7.4 Description of follow up measures

The follow up questionnaire was matched with baseline responses through participant name, date of birth or service number. Participants were asked to rate their deployment experience and to measure levels of combat exposure and associated appraisals.

The PCL-C, GHQ-12 and sleep scale were included at follow up. Full versions of the GAD and PHQ were included to obtain more detailed data.

2.7.4.1 GAD-7

The GAD-7 (Spitzer et al., 2006) previously established cut off scores of 5 (mild, 10 (moderate) and 15 (severe) were used in the current study. The Cronbach alpha coefficient was .888.

2.7.4.2 PHQ-9

The PHQ-9 provides ranges of depression from 5 (mild); 10 (moderate); 15 (moderately severe); and 20 (severe) (Spitzer, Kroenke & Wiliams, 1999). It has been shown to have an internal reliability of 0.89 and test-retest reliability of 0.84 (Kroenke, & Spitzer, 2001). When using a cut-off of 9, the PHQ-9 was shown to have sensitivity and specificity values of 0.95 and 0.84 respectively, however the authors noted that scores from five and above indicated sub-threshold depression (Kroenke & Spitzer., 2001). The positive likelihood ratio of scores of five-to-nine on the PHQ-9 was 0.5, that is, a score in this range is 1/20 times more likely in a respondent with depression than one without. In the current study, the Cronbach alpha coefficient was .865.

2.7.4.3 Sleep scale

Two of the baseline items were included at follow up. In the current study, the two item scale at baseline, used for repeated measures analyses, had a Cronbach alpha coefficient of .671 and at follow up had a Cronbach alpha coefficient of .800.

2.7.4.4 AUDIT

Finally, the Alcohol Use Disorders Identification Test (AUDIT) (Saunders et al., 1993) was included to measure alcohol use. The AUDIT is a 10 item questionnaire measure of drinking patterns, and is commonly used with a military sample to measure alcohol consumption (e.g. Rona et al., 2010). This measure generates three cut offs;

indicating hazardous drinking; a need for continued monitoring; or a need for further evaluation for alcohol dependence (Rona et al., 2010). Rona et al. (2010) found that those in the highest cut off also scored most highly on measures of functional impairment. In the current study, the AUDIT had a Cronbach alpha coefficient of .768.

2.7.4.5 Stigma

A 13 item stigma measure was included (in contrast to the seven item measure at baseline) the Cronbach alpha level in the current study was .882. Higher scores were indicative of greater stigma endorsement.

2.7.4.6 Relationships and childhood adversity

Participants were asked to rate their relationship with their spouse/partner and children (when applicable), as well as whether they had experienced any childhood adversity or trauma; higher scores indicative of greater difficulty or trauma. In the current study, the Cronbach alpha coefficient for the childhood adversity measure was .684.

2.7.4.7 Transition

Factors impacting transition were measured, e.g. whether the respondent felt supported by the military since returning home or had been able to speak about their experiences with friends or family. This measure contained 11 items, higher scores indicated greater transition difficulty. In the current study, the Cronbach alpha coefficient for this measure was .636.

2.7.4.8 Unit cohesion and leadership satisfaction

Attitudes regarding unit cohesion and leadership satisfaction were also measured. High scores on the cohesion scale indicate low unit cohesion; high scores on the

leadership scale indicate low satisfaction with leadership. In the current study, the Cronbach alpha coefficient for the cohesion scale was .790 and for the leadership scale was .630.

The transition, cohesion and leadership scales were all used in the UK 'Battlemind' study (Mulligan et al., 2012).

2.8 Procedure

2.8.1 Piloting of measures

The follow up questionnaire was piloted with military personnel who were completing a Trauma Risk Management course at Amport House in Hampshire. This was to assess clarity of the questions and the overall structure of the questionnaire. The course was attended by Army personnel from a wide range of ranks and all responses were kept anonymous.

All responders were unanimous that the questionnaire items were easy to understand, it was an acceptable length and the structure was easy to follow. Feedback was given that the original incentive for taking part of winning one of 120 £5 'Amazon.co.uk' gift vouchers would not be appealing after completing an operational tour. Despite the reduced chances of success, all responders agreed that the prize itself needed to be more engaging; therefore the incentive was altered to the chance of winning one of 15 2G 'iPod Shuffles'.

Responders at piloting also suggested that individuals were approached for the baseline stage of research whilst waiting for their flight home to help increase rates of responding i.e. being a 'captive audience'. See appendix E for pilot stage information sheet and consent form.

2.8.2 Baseline stage

Participants were recruited from decompression, which took place at Bloodhound Camp in Cyprus from March-August 2011. There was an identified team of professionals who delivered the battery of baseline questionnaires, largely Mental Health Nurses. There were roughly 12,386 personnel who completed Decompression between March and August 2011.

Potential participants were approached whilst waiting for their flight back to the UK, at the end of decompression. The research team, in collaboration with the decompression staff decided that this time was most appropriate as personnel were in one area for a set period, which enabled questionnaires to be completed and returned immediately. As participants were asked to rate their experience of decompression, it was important to gather feedback as close to the end of decompression as possible so all set activities had been completed. Members of decompression staff were available during questionnaire administration to assist participants if required.

The staff administering the questionnaire stressed to personnel that all responses would remain confidential and would not be seen by their Chain of Command (CoC). Individuals were separated out within the room to complete the questionnaire so participants could be confident that their responses would not be seen by their peers. The administration of the baseline questionnaire was in keeping with the methodology used by previous research conducted by the ACDMH and KCMHR.

All completed baseline questionnaires were returned to the decompression staff who immediately boxed up the responses and sent them back to the ACDMH in batches.

2.8.2.1 Identification of consenters to follow up

Once questionnaires were returned to the ACDMH, each participant was allocated an individual study number. This number was recorded on both the response booklet and consent form. The consent form was printed on a perforated sheet of the response booklet, so was removed for separate, secure storage.

Completed consent forms were then removed and stored in a secure filing cabinet at the ACDMH. The completed questionnaires were then sent for data entry and each individual follow up consenter was contacted by EB.

2.8.2.2 Data entry

All baseline questionnaire responses were sent to Abacus Data Entry Limited, an outsourced data entry company who have been used by the ACDMH for previous studies. Responses were received back both in their original hard copy and a coded SPSS file.

Responses from participants who completed the follow up questionnaire over the telephone or at site visits were entered on to the SPSS database manually by EB. All SelectSurvey responses were exported directly into SPSS from the website.

2.8.2.3 Contacting follow up participants

Participants were contacted via email initially (see appendix F for the email outline used). Non-responders were contacted a minimum of 10 days later with a further email. Individuals who had not responded to email were then telephoned a minimum of 10 days after the reminder email.

Participants were telephoned by EB at the time window specified on their consent form (morning, afternoon or evening). Individuals were telephoned on an individual basis as deemed appropriate e.g. in the instances when numbers went to voicemail, these

were attempted two-to-three times a week. Figures 1 and 2 (see page 57 and 58) show the timeline of contacting follow up participants.

When participants had only provided a telephone number for contact details, participants were called by EB who described the research purpose, confidentiality procedures and researcher affiliation (i.e. the Institute of Psychiatry, King's College London, and not the Ministry of Defence).

2.8.2.3.1 Site visits

Site visits were conducted to three sites to help increase rates of responding. The Community Mental Health Nurse (CMHN) responsible for each site was contacted by a member of the ACDMH research team to arrange a visit in order to complete the questionnaires with the identified personnel. Both potential participants and their CoC were assured of the study confidentiality and that asking personnel to complete the follow up questionnaire did not mean that they had indicated a problem at baseline.

Captain Fertout and EB attended Tidworth and Bulford Camp to give questionnaires to non-responders from the 3rd (UK) Division HQ and Signal Regiment (3 DSR) and the 2nd Royal Tank Regiment (RTR) respectively. EB attended RAF Benson to distribute further follow ups to personnel from 28 Squadron and 78 Squadron.

The instructions given to the participants were the same as if completing the online questionnaire as participants received the information sheet and consent form. No additional information or assistance was provided (or requested). Participants completed the questionnaires individually and were separated within the room to ensure that responses remained confidential. The completed questionnaires were collected at the end of the visit and taken back to KCL by hand.

Fig 2.2. Recruitment flowchart I: Breakdown of participant contact

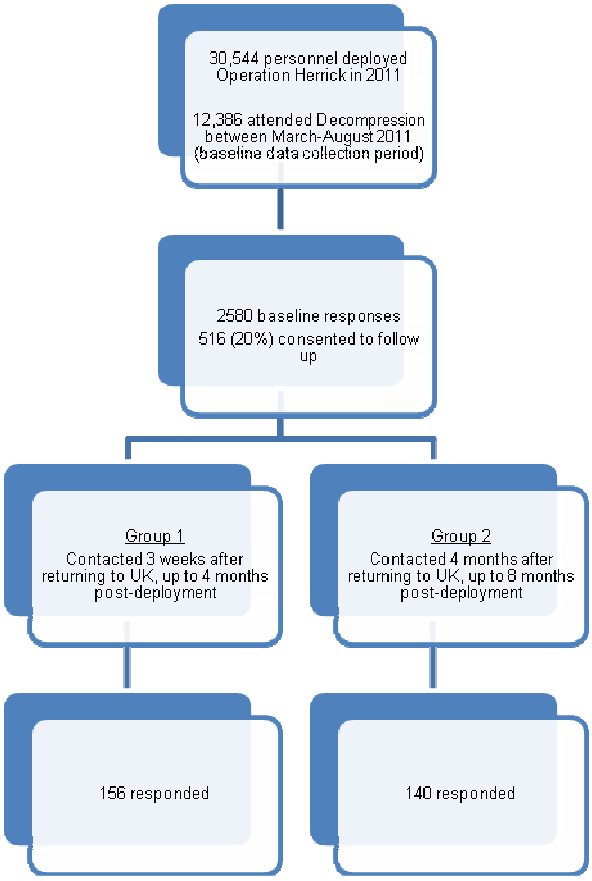
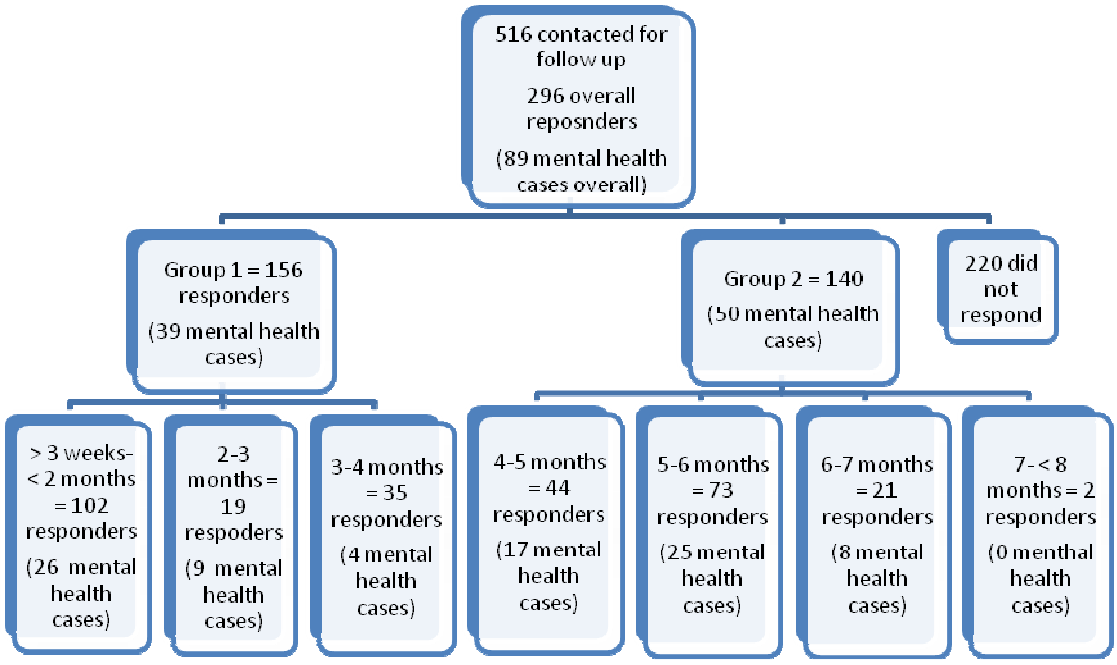


Fig 2.3. Recruitment flowchart II: Breakdown of group 1 and 2 responders



A score of 30 on the PCL-C; 4 on the GHQ-12 (using the 0,0,1,1 GHQ scoring method); score of 3 or more on PHQ-2; or 1 or more symptoms on the GAD-2 were the cut offs used for symptomatology to identify baseline cases. Follow up responders were split into two groups between those replying up to and after four months post-deployment.

Those reaching threshold for mental health caseness at follow up were also indentified for analyses. Follow up cut offs were a score of either 30 on the PCL-C; 4 on the GHQ-12; or five or more on the PHQ-9 or GAD-7.

Due to the staggered nature of questionnaire return and time taken to respond, natural delay helped to provide participants' responses over the six month follow up period. On receipt of the first two batches of baseline responses, follow up questionnaires were sent out in quick succession to gauge rates of responding. Subsequent batches of follow up consenters were divided into either the first or second

group, to ensure balanced group numbers. All personnel recruited via a site visit fell within group two responders.

Each participant completed only one follow up questionnaire, so once their follow up response had been received they were no longer contacted for the study.

2.8.2.4 Data storage

All consent forms and completed questionnaires were stored in secure filing cabinets at the ACDMH. The data files were stored on secure KCL computers and password protected. If files were being transferred between members of the research team, this was done via encrypted 'IronKey' devices.

2.9 Data analysis

Responses were collapsed down into Baseline (decompression), T1 (> 3 weeks to < 4 months post homecoming), and T2 (> four to < eight months post homecoming).

2.9.1 Descriptive statistics

Demographic data such as age, rank, gender and previous number of operational tours completed, were gained for descriptive statistics.

2.9.2 Repeated measure analysis

To measure change in repeated measures from baseline to follow up (hypothesis one), data were analysed using Wilcoxon Signed Rank to measure within group change and Mann Whitney U to measure between group difference. Non-parametric tests were used as the data for this hypothesis was not normally distributed with a negative skew and there was a large proportion of zeros within the data set, so data would not have responded to transformations.

2.9.3 Longitudinal analyses

All independent variables were assessed for normality prior to completing regression analyses using histograms and Q-Q plots. Due to the predominantly negative skew of the data, regression analyses were conducted using the SPSS Generalized Linear Model (GLM) option, with maximum likelihood estimation and robust standard error. This was to control for violations of the assumptions of regression within the data set, such as non-normally distributed data and rare events within variables.

In order to test for multicolinearity, all independent variables were tested for correlations and any measures with a correlation coefficient of >.7 were not included in the same regression model as predictor variables. In the case of correlating variables being eligible for the same regression model, the one deemed most important for the particular hypothesis was selected.

All predictor variables were included in each regression model and in a systematic fashion to ascertain the best predictor variable for each model all applicable predictor variables were entered in to a linear regression model (when dependent variable was continuous). Predictors achieving a p value <.4 were entered into a further linear regression. Predictors from this model with a p value <.1 were entered into a third linear model. Predictors from this third model achieving a p value <.05 were entered into a logistic regression model and the dependent variable was created into a binary. If a predictor failed to reach the <.05 significance in the final model those showing a trend (<.1) were entered into the logistic model.

A non-GLM logistic regression was run for the final model in order to gain statistics regarding predictive power of the model (as this is not supplied in GLM format).

In the case of categorical predictor variables, logistic regression was run from the outset, and the same step-wise removal of predictor variables was employed.

If a categorical predictor variable had fewer than 10 events in each category, a Chi-Square test was run in order to gain Fisher's Exact significance value as the logistic model would lack power for a low number of cases.

Dependent variable outliers were identified within a linear regression model via examination of the 'standardised Pearson residual' values. If values over 2.5 were identified, the model was re-run with these cases de-selected, if the significance of the model altered with these cases removed, the variable was transformed, if no significant alteration occurred, the variable remained in its original form.

Multiple comparisons were controlled for by lowering the alpha level from .05 to .01, to reduce the likelihood of significant results reflecting false positives.

3 Results

3.1 Demographics

2580 personnel completed the baseline survey and 586 (22.7%) gave written consent to follow up. 296 (50.5%) of those consenting to follow up completed the follow up survey, n=156 (52.7%) by the 4 month follow up point and n=140 (47.3%) by the eight month point. The two follow up samples did not differ significantly on any of the main demographic characteristics. When compared with the UKAF demographics as a whole, the follow up sample contained a much larger proportion of Royal Air Force personnel and fewer Royal Marine and Royal Navy personnel than would normally be expected; junior ranks and younger personnel were under-represented, officer ranks were over-represented; women were somewhat over-represented and there were fewer reserve forces than expected. However when considering that the percentage of deployed reserve forces is 11% (Browne et al., 2007), the current responder rates are largely in keeping with this.

The demographic characteristics of the follow up samples and the UKAF (where comparative data were available) are shown in Table 3.1. Data for tables 3.1-3.3 and 3.7 were taken from a report compiled for the MoD by the ACDMH research team.

Table 3.1: Demographic factors

Factor	**Post TLD[1] n (%)**	**3 MFU n (%)**	**6 MF n (%)**	***UKAF (%)**	****χ^2d.f. *p***
Service Background (n=294)					
RN & RM	37 (12.6)	15 (9.6)	22 (15.9)	20.0	**χ^2=3.47, d.f.2, *p*=NS**
Army	132 (44.9)	76 (48.7)	56 (40.6)	57.5	
RAF	125 (42.5)	65 (41.7)	60 (43.5)	22.5	
Rank (n=294)					
Junior Rank	99 (33.6)	52 (33.3)	47 (34.1)	60.7	**χ^2=6.92, d.f.4, *p*=NS**
Senior NCO	84 (28.6)	40 (47.6)	44 (52.4)	22.7	
Junior Officer	81 (27.6)	51 (32.7)	30 (21.7)	13.6	
Senior Officer	30 (10.2)	13 (8.3)	17 (12.3)	3.1	

[1] Third Location Decompression (TLD)

Sex (n=291)					
Male	252 (86.6)	138 (89.6)	114 (83.2)	90.4	**χ^2=2.56, d.f.1, *p*=NS**
Female	39 (13.4)	16 (10.4)	23 (16.8)	9.6	
Relationship Status (n=295)					
Not in a Relationship	49 (16.6)	25 (16.0)	24 (17.3)		**χ^2=0.08, d.f.1, *p*=NS**
In a Relationship	246 (83.4)	131 (84.0)	115 (82.7)		
Children (292)					
Dependent Children	158 (54.1)	85 (54.8)	73 (53.3)		**χ^2=0.07, d.f.1, *p*=NS**
No Dependent Children	134 (45.9)	70 (45.2)	64 (46.7)		
Age Groups (n=287)					
18-24	30 (10.4)	15 (10.0)	15 (10.0)	10.6	**χ^2=6.58, d.f.6, *p*=NS**
25-29	53 (18.5)	31 (20.7)	22 (16.1)	28.9	
30-34	58 (20.2)	34 (22.7)	24 (17.5)	24.4	
35-39	53 (18.5)	25 (16.7)	28 (20.4)	17.3	
40-44	51 (17.8)	26 (17.3)	25 (18.2)	10.9	
45 Plus	42 (14.6)	19 (12.7)	23 (16.8)	8.0	
Service Length (n=262)					
1-4 Years Service	35 (13.4)	19 (13.8)	16 (12.9)		**χ^2=0.04, d.f.1, *p*=NS**
5 Years Service plus	227 (86.6)	119 (86.2)	108 (87.1)		
Engagement Type (n=293)					
Regular	264 (90.1)	142 (91.0)	122 (89.1)		**χ^2=0.32, d.f.1, *p*=NS**
Reserve	29 (9.9)	14 (9.0)	15 (10.9)	16.4	
Individual Augmentee or Formed Unit (n=295)					
FU	140 (47.5)	72 (46.2)	68 (48.9)		**χ^2=0.23, d.f.1, *p*=NS**
IA	**155 (52.5)**	**84 (53.8)**	**71 (51.1)**		

*** www.Dasa.mod.uk accessed Nov 2011**
** For the difference in the proportions in the 3 month and 6 month follow-up categories

The groups did not differ significantly for any of the operational factors measured. Over half of follow up responders had completed two or more previous tours and had spent 17 to 24 weeks on deployment. Approximately 10% had been deployed within a given timeframe for a cumulative period exceeding that recommended by command (known as 'Harmony Guidelines'). The majority of respondents were deployed in a main operating base. Approximately half reported that they had been exposed to at least two of three potentially traumatic operational events (perceptions of impending death or injury, spending time operating in a hostile area and experiencing base attacks). The operational data are shown in Table 3.2.

Table 3.2: Operational factors

Operational Factors	Post TLD[2] n (%)	3 MFU n (%)	6 MF n (%)	***χ^2 d.f. *p***
Previous Deployments (n=293)				
0-1	130 (44.4)	63 (40.6)	67 (48.6)	**χ^2 =1.84, d.f.1, *p*=NS**
2 Plus	163 (55.6)	92 (59.4)	71 (51.4)	
Deployment Duration (n=295)				
0-16 Weeks	140 (47.5)	66 (42.6)	74 (52.9)	**χ^2 =3.12, d.f.1, *p*=NS**
17-27 Weeks	155 (52.5)	89 (57.4)	66 (47.1)	
Harmony Guidelines (n=288)				
Deployed Within Harmony (<1 year deployed in Three)	259 (89.9)	136 (91.3)	123 (88.5)	**χ^2 =0.62, d.f.1, *p*=NS**
Harmony Breach (>1 Year deployed in Three)	29 (10.1)	13 (8.7)	16 (11.5)	
Theatre Location (n=291)				
Check Point (CP)	12 (4.1)	5 (3.3)	7 (5.0)	**χ^2 =5.37, d.f.3, *p*=NS**
Patrol Base (PB)	26 (8.9)	19 (12.5)	7 (5.0)	
Forward Operating Base (FOB)	21 (7.2)	11 (7.2)	10 (7.2)	
Main Operating Base (MOB)	232 (79.7)	117 (77.0)	115 (82.7)	
Potential Operational Exposure (n=295)				
0-1 Exposure (Maximum 3 Exposures)	151 (51.2)	76 (49.0)	75 (53.6)	**χ^2 =0.61, d.f.1, *p*=NS**
2-3 Exposures (Maximum 3 Exposures)	**144 (48.8)**	**79 (51.0)**	**65 (46.4)**	

3.1.1 Non-responder analysis

A non-responder analysis was conducted to reveal any significant differences between follow up responders and non-responders. The previous discussion compared respondents in relation to the general UKAF, the following shall discuss any differences between those who completed the baseline stage only (non-responders) and those who completed both baseline *and* follow up questionnaires. The full tables can be found in Appendix G.

[2] Third Location Decompression (TLD)

3.1.1.1 Demographic differences

A Chi-square test for independence (with Yates Continuity Correction) indicated that each of the following variables were related to responding to follow up. There were significantly more respondents than non-respondents who were in *higher ranks* (x^2 (4, n 2565) = 140.995, p=.000, phi =.234); *female* (x^2 (1, n 2451) = 5.730, p=.017, phi = -.051); *in a relationship* (x^2 (1, n=2561) = 15.326, p=.000, phi =-.079); *over 24* (x^2 (1, n=2497) = 28.427, p= .000, phi= -.108); *had children under 18 (*x^2 (1, n 2478) = 4.656, p=.031, phi = -.045); *had a longer service length* (x^2 (4, n=2169) = 43.857, p= .000, phi= .142); *was an individual augmentee* (x^2 (1, n=2563) = 29.377, p=.000, phi= -.108) *and reserve force personnel* (x^2 (1, n=2567) = 31.454, p=.000, phi= -.114).

3.1.1.2 Operational differences

A Chi-square test for independence (with Yates Continuity Correction) indicated that the operational variables were not related to responding to follow up. See Appendix G for full details.

3.1.1.3 Mental health and stigma differences

A Chi-square test for independence (with Yates Continuity Correction) indicated that each of the following variables were related to responding to follow up. There was borderline statistical significance indicating those who scored higher on the GHQ-12 at baseline were more likely to respond to follow up (x^2 (1, n=2531) = 3.713, p=.054, ph i= -.041). There was a significant association between stigma and responding (x^2 (1, n=2485) = 8.747, p=.003, phi = -.061).

3.2 Data context

3.2.1 Mental health

Symptoms of poor mental health are explored in hypothesis one.

3.2.2 Functional impairment

Table 3.3: Functional impairment baseline to follow up

	Impairment Level (n=)		
Survey Group	**Absent n(%)**	***Present n(%)**	**χ^2 =, d.f., *p*=**
Initial (277)	242 (87.4)	35 (12.6)	**χ^2 =9.41, d.f.1, *p*=<0.01**
Follow Up (274)	211 (77.0)	63 (23.0)	
3 MFU (146)	131 (77.4)	33 (22.6)	**χ^2 =0.03, d.f.1, *p*=NS**
6 MFU (128)	**98 (76.6)**	**30 (23.4)**	

Table 3.3 shows the rates of reported functional impairment arising from PTSD symptoms had risen significantly from 12.6% upon completion of TLD to 23.0% at follow up. There were no significant differences between follow up groups. PCL-C was the only measure to assess functioning at baseline and follow up.

Follow up caseness and functional impairment is shown in table 4, functional impairment associated with PHQ-9 was not measured due to administration error.

Table 3.4: Functional impairment follow up

Measure	N	%
PCL-C (≥30)	40	70.2
GHQ-12 (≥4)	21	44.7
GAD-7 (≥5)	34	59.6

The majority of respondents meeting PTSD possible caseness reported functional impairment. Just over half of those meeting anxiety caseness and just under half of those meeting CMD caseness reported functional impairment as a result of such symptoms.

3.2.3 Self reported symptoms and help seeking

Respondents were asked if they had experienced problems regarding one or more of: physical ill health; stress or emotion; alcohol; relationship or family.

Table 3.5: Current symptoms

Number of symptom categories	Frequency	Valid Percent
0	191	65.2
1	59	20.1
2	33	11.3
3	8	2.7
4	2	.7
Total	293 (n=3 missing data)	100

Most responders had not experienced a mental health or relationship difficulty since homecoming. 30 (29.4%) of the 102 respondents who reported symptoms identified that they had sought help for these problems.

Those who sought help identified which source(s) of support they approached.

Table 3.6: Sources of help

Source of help	Frequency	Percent
Medical officer or GP	26	24.8
Spouse or partner	17	16.2
Military friends	16	15.2
Family member	10	9.5
Chain of command	9	8.6
Other non-medical professional (e.g. padre, welfare officer)	9	8.6
Civilian friends	8	7.6
Mental health professional	5	4.8
TRiM practitioner	5	4.8

Respondents most frequently consulted their medical officer or GP, followed by their spouse or partner and military friends.

N=29 (9.8%) reported they were currently experiencing a stress or emotional problem; n=18 (62.1) of this group reported that they would be interested in receiving help for this problem.

3.2.4 Transition problems and Post Deployment Readjustment

Of the eleven transition items included, the most common problem was the perception that others didn't understand what the person had been through. The number of problems reported ranged from 0 to 7 (Mean=2.5, Median=2.00, Mode=1, SD=1.67). Transition problems in relation to mental health outcomes are reported in hypothesis seven.

3.2.5 Stigma regarding mental ill health and perceived barriers to accessing mental health care

Personnel were significantly more likely to report one or more stigmatisation/barriers to care items at follow up compared to baseline. There were no statistical differences in the rates of reporting one or more stigma items between the two groups at follow up. Mental illness stigmatisation and barriers to accessing care are shown in Table 3.7.

Table 3.7: Mental illness and barriers to accessing care

	Mental Health Stigmatisation/BTC		
Survey Point	**No Stigma n(%)**	**≥1 Stigmas n(%)**	**χ^2 =, d.f., *p*=**
Initial (290)	147 (51.8)	137 (48.2)	**χ^2 =33.24, d.f.1, *p*=<0.0001**
Follow Up (279)	78 (28.0)	201 (72.0)	
3 MFU (145)	38 (26.2)	107 (73.8)	**χ^2 =0.50, d.f.1, *p*=NS**
6 MFU (134)	**40 (29.9)**	**94 (70.1)**	

3.3 Hypotheses analyses

3.3.1 Hypothesis one

Deployed personnel will show gradual improvement over time in their emotional well being as shown in a variety of outcomes: probable PTSD, possible anxiety, possible depression, poor general mental health, adjustment, family relationships, sleep and alcohol use.

Table 3.8: Mental health scores at baseline and follow up

Measure	N	Minimum	Maximum	Mean	**Std. Deviation**
PCL-C Baseline	292	17	54	21.22	**5.882**
PCL-C Follow up	281	17.00	59.00	24.0890	**8.65010**
GHQ-12 Baseline	295	0	10	1.38	**2.074**
GHQ-12 Follow up	280	.00	7.00	1.4286	**1.86514**
PHQ-2 Baseline	291	0	5	.54	**.936**
PHQ-2 Follow up	280	.00	6.00	.6321	**1.04917**
Sleep Dissatisfaction Baseline	294	0	1	.52	**.500**
Sleep Dissatisfaction Follow up	280	.00	1.00	.2714	**.44549**
Sleep Interference Baseline	256	0	1	.02	**.124**
Sleep Interference Follow up	**139**	**.00**	**1.00**	**.1079**	**.31139**

Table 3.8 shows that the numbers of symptoms of mental disorder, apart from *sleep dissatisfaction,* increased from baseline to follow up. To ascertain if this difference was significant, non-parametric tests were used, as data was highly positively skewed. GAD2 outcomes were not compared as incompatible measures were used at the initial and follow-up survey points.

3.3.1.1 Differences between symptoms at baseline and follow up

Wilcoxon Signed Rank tests were run to establish any within group differences from baseline to follow up.

Table 3.9: Within group differences in mental health scores

Mental health measure	Follow up group number	Z score	Significance (p)	Group size (N)	Effect sixe (r)[3]
PCL-C	1	5.781	.000	145	.480
	2	3.111	.002	132	.270
GHQ-12	1	.478	.633	148	
	2	.499	.618	131	-
PHQ-2	1	1.404	.160	145	-
	2	.689	.491	130	-
Sleep dissatisfaction	1	-4.355	.000	145	.361
	2	-4.500	.000	133	.390
Sleep distress	1	1.414	.157	63	-
	2	2.828	.005	63	.356

Table 3.9 shows PCL-C scores increased significantly from baseline to follow up for both follow up groups. Sleep distress significantly increased within follow up group two. Sleep dissatisfaction significantly improved from baseline to follow up for both groups; note this scale is not validated in troops returning from deployment who have been sleeping in an unusual environment whilst on operation.

3.3.1.2 Between group differences in symptom reporting

Mann-Whitney U tests were used to establish whether there was a between group difference between total symptoms of poor mental health between those responding in the first or the second follow up groups and the results are shown below.

Table 3.10: Between group differences in poor mental health

Mental Health Measure	Mann Whitney U score	Z score	Significance (p)	Group size (N)
PCL-C	9837.000	.515	.606	276
GHQ-12	9370.000	-.387	.669	278
PHQ-2	9460.500	.183	.855	274
Sleep Dissatisfaction	10027.000	.782	.434	277
Sleep distress	1833.000	-1.023	.306	125

[3] Effect size calculated for significant results only

Table 3.10 shows no significant differences between the two follow up groups regarding their responses to the follow up measures.

3.3.1.3 Hypothesis one summary

Overall, hypothesis one has not been supported, as scores on four out of five measures *increased* from baseline to follow up.

All linear regressions for the following hypotheses are reported in Appendix G in hypothesis order.

3.3.2 Hypothesis two

3.3.2.1 Poor mental health symptoms at baseline and follow up will be predictive of greater endorsement of stigma beliefs at baseline and follow up. Baseline stigma predicted by poor baseline mental health

Two predictor variables were included in logistic regression, however the 'impact of sleep problems' variable caused a 'quasi complete separation in the data set' thereby rendering the model invalid. This variable was removed from the model and PCL was the remaining predictor variable to include in the final logistic model, reported in table 3.11:

Table 3.11: Logistic regression output baseline mental health predicting stigma

Parameter			95% Wald Confidence Interval		Hypothesis Test				95% Wald Confidence Interval for Exp(B)	
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)	Lower	Upper
Group number	.486	.2482	-.001	.972	3.827	1	.050	1.625	.999	2.644
PCL total	.115	.0279	.060	.169	16.927	1	.000	1.121	1.062	1.184

The full model was significant, χ^2 (2, N=290) = 26.435, P<.001, therefore was able to distinguish between respondents who did and did not endorse one or more stigma items at baseline. The model as a whole explained between 7.6% (Cox and Snell R Square) and 10.2% (Nagelkerke R Square) of the variance in stigma endorsement and correctly identified 62.1% of cases. Table 11 shows PCL score and group number made uniquely statistically significant contributions to the model. The odds ratios indicated that those in the second follow up group were just over one and a half times more likely to endorse one or more stigma items at baseline than those in the first follow up group and respondents with higher PCL scores were just over one factor more likely to endorse one or more stigma beliefs at baseline.

3.3.2.2 Stigma at follow up predicted by poor baseline mental health

The linear model with all predictor variables did not meet significance (p=.103). The overall p value reduced to .048 when predictor variables >.4 were removed from the model. PHQ recorded a p value <.1, however when included individually in the GLM logistic regression model (with robust estimator) the model produced was invalid due to the maximum number of step-halvings being reached and the log-likelihood value could not be further improved. This error was not reported when the test was re-run without robust estimator, however to comply with protocol, a Chi-square test was run to ascertain if there was a relationship between baseline PHQ and follow up stigma endorsement.

A chi-square test for independence (with Yate's continuity correction) was run, which indicated that there was a borderline significant relationship between baseline PHQ score and follow up stigma endorsement, χ^2 (1, n=275) = 3.704, p= .054, phi = .128.

3.3.2.3 Stigma at follow up predicted by poor follow up mental health

Three separate regressions were run for the most predictive variables: PCL-C, PHQ-9 and GAD-7, so as not to violate the assumptions of muticolinearity as the three variables were highly correlated.

3.3.2.3.1 Follow up stigma and PCL-C

Table 3.12: Logistic regression output follow up PCL-C predicting stigma

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.022	.2955	-.601	.557	.006	1	.940	.978	.548	1.745
PCL total	.061	.0269	.008	.114	5.146	1	.023	1.063	1.008	1.121

The full model was significant, χ^2 (2, N=266) = 8.773, p =.012, therefore was able to distinguish between respondents who did and did not endorse one or more stigma beliefs at follow up. The model as a whole explained between 16.9% (Cox and Snell R Square) and 25.4% (Nagelkerke R Square) of the variance in stigma endorsement, and correctly classified 76.426% of cases. Table 3.12 shows PCL score made a borderline statistically significant contribution to the model, the odds ratio indicated that for each increase in PCL score, respondents were just over one factor more likely to endorse one or more stigma beliefs.

3.3.2.3.2 Follow up stigma and PHQ

Table 3.13: Logistic regression output follow up PHQ predicting stigma

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.013	.2928	-.587	.561	.002	1	.964	.987	.556	1.752
PHQ total	.164	.0734	.020	.307	4.961	1	.026	1.178	1.020	1.360

The full model was significant, χ^2 (2, N=265) = 10.997, p =.004, therefore was able to distinguish between respondents who did and did not endorse one or more stigma beliefs at follow up. The model as a whole explained between 12.4% (Cox and Snell R Square) and 18.5% (Nagelkerke R Square) of the variance in stigma endorsement, and correctly classified 75.9% of cases. Table 3.13 shows PHQ score made a borderline statistically significant contribution to the model, the odds ratio indicated that for each increase in PHQ score, respondents were just over one factor more likely to endorse one or more stigma beliefs.

3.3.2.3.3 Follow up stigma and GAD

Table 3.14: Logistic regression output follow up GAD predicting stigma

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	.066	.2967	-.515	.648	.050	1	.823	1.068	.597	1.911
GAD total	.163	.0665	.033	.293	6.014	1	.014	1.177	1.033	1.341

The full model was significant, χ^2 (2, N=265) = 9.661, p =.008, therefore was able to distinguish between respondents who did and did not endorse one or more stigma beliefs at follow up. The model as a whole explained between 9.1% (Cox and Snell R Square) and 13.6% (Nagelkerke R Square) of the variance in stigma endorsement, and correctly classified 75.9% of cases. Table 3.14 shows GAD total score made a borderline statistically significant contribution to the model, the odds ratio indicated that for each increase in GAD score, respondents were just over one factor more likely to endorse one or more stigma beliefs.

3.3.2.4 Hypothesis two summaries

Hypothesis two was partially supported, as symptoms of poor mental health were either significantly or borderline significantly predictive of stigma reporting at the same time point (baseline or follow up). However there was no significant relationship between stigma endorsement and poor mental health at different time points.

3.3.3 Hypothesis three

Poor mental health at baseline will be a strong predictor of poor mental health at follow up.

3.3.3.1 PCL-C

Table 3.15: Logistic regression output baseline PCL predicting follow up PCL

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.264	.3120	-.876	.347	.716	1	.397	.768	.417	1.415
PCL total	.075	.0347	.007	.143	4.675	1	.031	1.078	1.007	1.154
GHQ total	.117	.0804	-.041	.274	2.108	1	.147	1.124	.960	1.316

The full model was significant, χ^2 (3, N=276) = 21.308, p <.001, therefore was able to distinguish between respondents who did and did not meet PCL-C caseness at follow up. The model as a whole explained between 22.9% (Cox and Snell R Square) and 35.5% (Nagelkerke R Square) of the variance in stigma endorsement, and correctly classified 77.8% of cases. Table 3.15 shows PCL-C baseline score made a borderline statistically significant contribution to the model, the odds ratio indicated that for each increase in baseline PCL-C score, respondents were just over one factor more likely to reach probable PCL-C caseness at follow up.

3.3.3.2 GHQ-12

Outliers were present in the initial linear regression model, however, removal of these did not affect the significance of the overall model or individual predictors, therefore the GHQ measure was not transformed.

Table 3.16: Logistic regression output baseline GHQ predicting follow up GHQ

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.286	.3257	-.924	.353	.770	1	.380	.751	.397	1.423
GHQ caseness baseline	1.120	.4004	.336	1.905	7.831	1	.005	3.066	1.399	6.720

The full model was borderline significant, χ^2 (2, N=278) = 8.076, p =.018, therefore was able to distinguish between respondents who did and did not meet caseness on the follow up GHQ measure. The model as a whole explained between 2.2% (Cox and Snell R Square) and 3.7% (Nagelkerke R Square) of the variance in GHQ caseness, and correctly classified 83.2% of cases. Table 3.16 shows GHQ total

score made a uniquely statistically significant contribution to the model, the odds ratio indicated that for each increase in baseline GHQ score, respondents were just over three factors more likely to meet GHQ caseness at follow up. Sleep impact on functioning was also a significant predictor in the linear model, however did not have sufficient cases for inclusion in logistic regression; a Fisher's exact test revealed sleep impact on functioning was not significantly predictive of follow up GHQ (p=.153).

3.3.3.3 GAD-7

GAD and PHQ at baseline were the most significant predictor variables, however as they were highly correlated (>.7) only one was included in logistic regression. The most predictive was PHQ at baseline, therefore was included in the logistic regression below (mild GAD-7 caseness).

Table 3.17: Logistic regression output baseline PHQ predicting follow up GAD

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.346	.3113	-.956	.264	1.234	1	.267	.708	.384	1.303
PHQ total	.561	.1661	.235	.886	11.393	1	.001	1.752	1.265	2.426

The full model was significant, χ^2 (2, N=274) = 16.515, p =.000, therefore was able to distinguish between respondents who did and did not meet caseness on the follow up GAD measure. The model as a whole explained between 5.4% (Cox and Snell R Square) and 8.5% (Nagelkerke R Square) of the variance in GAD caseness, and correctly classified 78.9% of cases. Table 3.17 shows PHQ total score made a uniquely statistically significant contribution to the model, the odds ratio indicated that for each

increase in baseline PHQ score, respondents were almost two factors more likely to meet GAD caseness at follow up.

3.3.3.4 PHQ-9

Baseline PHQ was the most highly predictive variable of PHQ at follow up, however the logistic regression model showed poor fit as the significance value for the Hosmer and Lemeshow Goodness of Fit Test was <.05. Therefore a Chi-Square test for independence (with Yate's continuity correction) indicated a significant association between PHQ-2 score at baseline and PHQ-9 score at follow up, χ^2 (1, n=275) = 12.18, p=.000, phi=.22.

3.3.3.5 Sleep satisfaction

Hosmer and Lemeshow statistics indicated a poor model fit for the final logistic regression, with sleep satisfaction at baseline as the most significant predictor variable (Hosmer and Lemeshow p<.001). Therefore a McNemar Test for repeated measures was run, which indicated a significant association between sleep dissatisfaction at baseline and follow up, (n=278) p=.000.

3.3.3.6 Sleep impact on functioning

The logistic regression was not significant when all predictor variables, those with p <.4, or p<.1. Therefore it was concluded that sleep dissatisfaction at follow up was not predicted by symptoms of poor mental health at baseline: χ^2(5, n=135) = 7.293, p=.200.

Table 3.18: Logistic regression output baseline mental health scores predicting follow up sleep function

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.496	.5918	-1.656	.664	.703	1	.402	.609	.191	1.942
PCL total	-.058	.0484	-.153	.037	1.453	1	.228	.943	.858	1.037
GHQ total	.199	.1210	-.039	.436	2.694	1	.101	1.220	.962	1.546
GAD total	.550	.4164	-.266	1.366	1.746	1	.186	1.734	.767	3.921
Sleep satisfaction	.868	.6846	-.473	2.210	1.609	1	.205	2.383	.623	9.116

3.3.3.7 Hypothesis three summaries

Hypothesis three was largely supported as in the main, poor mental health at follow up was significantly predicted by symptoms of poor mental health at baseline.

3.3.4 Hypothesis four

Better mental health at baseline and follow up will be predictive of higher unit cohesion and leadership satisfaction at follow up. Higher unit cohesion and leadership satisfaction will be predictive of better mental health at follow up.

3.3.4.1 Baseline predictors of leadership satisfaction

GHQ was the only predictor to reach $p<.05$ for entry in to logistic regression. The model had low predictive power as the Hosmer and Lemeshow value was <.05 and the positive predictive power of the model was 0%. Therefore a Chi-Square test for independence (with Yate's Continuity Correction) was run which indicated no significant association between baseline GHQ and leadership satisfaction, χ^2 (1, n=279) = 2.131, p=.144, phi=.101.

3.3.4.2 Baseline predictors of unit cohesion

Table 3.19: Logistic regression output baseline GHQ predicting unit cohesion

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.172	.3692	-.896	.551	.217	1	.641	.842	.408	1.736
GHQ total	1.102	.4373	.244	1.959	6.346	1	.012	3.009	1.277	7.089

The full model was borderline significant, χ^2 (2, N=286) = 6.457, p =.040, indicating the ability to distinguish between respondents who did and did not report low levels of unit cohesion at follow up. The model as a whole explained between 2.9% (Cox and Snell R Square) and 5.4 % (Nagelkerke R Square) of the variance in unit cohesion, and correctly classified 87.5% of cases. Table 3.19 shows GHQ total score made a borderline statistically significant contribution to the model, the odds ratio indicated that for each increase in GHQ score, respondents were just over three factors more likely to report low unit cohesion at follow up.

3.3.4.3 Follow up predictors of leadership satisfaction

Table 3.20: Logistic regression output follow up GAD predicting leadership satisfaction

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	.363	.3298	-.283	1.010	1.214	1	.271	1.438	.754	2.745
GAD total	.175	.0485	.080	.270	13.037	1	.000	1.191	1.083	1.310

The full model was significant, χ^2 (2, N=270) = 19.455, p =.000, indicating that it could distinguish between respondents who did and did not report low levels of leadership satisfaction at follow up. The model as a whole explained between 6.6% (Cox and Snell R Square) and 10.5 % (Nagelkerke R Square) of the variance in leadership satisfaction, and correctly classified 80.4% of cases. Table 3.20 shows GAD total score made a uniquely statistically significant contribution to the model, the odds ratio indicated that for each increase in GAD score, respondents were just over one factor more likely to report more dissatisfaction with leadership at follow up.

3.3.4.4 Follow up predictors of unit cohesion

Table 3.21: Logistic regression output follow up PHQ predicting unit cohesion

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.146	.3837	-.898	.606	.145	1	.703	.864	.407	1.833
PHQ total	.134	.0383	.059	.209	12.351	1	.000	1.144	1.061	1.233

The full model was significant, χ^2 (2, N=278) = 11.383, p =.003, indicating that it could distinguish between respondents who did and did not report low levels of unit cohesion at follow up. The model as a whole explained between 4% (Cox and Snell R Square) and 7.7 % (Nagelkerke R Square) of the variance in leadership satisfaction, and correctly classified 88.2% of cases. Table 3.21 shows PHQ score made a uniquely statistically significant contribution to the model; the odds ratio indicated that for each increase in follow up PHQ score, respondents were just over one factor more likely to report lower levels of unit cohesion.

3.3.4.5 Unit cohesion and leadership satisfaction predicting follow up mental health difficulties

3.3.4.5.1 PCL-C

Table 3.22: Logistic regression output cohesion and leadership predicting follow up PCL

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.297	.3074	-.900	.305	.937	1	.333	.743	.407	1.357
Cohesion Total	.230	.1347	-.034	.494	2.926	1	.087	1.259	.967	1.640
Leadership Total	.167	.0551	.059	.275	9.171	1	.002	1.182	1.061	1.316

The full model was significant, χ^2 (3, N=270) = 20.495, p =.000, indicating that it could distinguish between respondents who did and did not report symptoms of possible PTSD caseness at follow up. The model as a whole explained between 6.2% (Cox and Snell R Square) and 9.5 % (Nagelkerke R Square) of the variance in PCL total score, and correctly classified 78.6% of cases. Table 3.22 shows satisfaction with leadership made a uniquely statistically significant contribution to the model, the odds ratio indicated that for each increase in leadership dissatisfaction at follow up, respondents were just over one factor more likely to report symptoms meeting possible caseness for PTSD at follow up.

3.3.4.5.2 GHQ-12

Table 3.23: Logistic regression output cohesion and leadership predicting follow up GHQ

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.324	.3289	-.968	.321	.970	1	.325	.723	.380	1.378
Cohesion Total	.147	.1468	-.140	.435	1.007	1	.316	1.159	.869	1.545
Leadership total	.235	.1388	-.037	.507	2.860	1	.091	1.265	.963	1.660

The full model was borderline significant, χ^2 (3, N=269) = 7.477, p =.059, indicating the ability to distinguish between respondents who did and did not report symptoms of possible GHQ caseness at follow up to a borderline degree. The model as a whole explained between 2.4% (Cox and Snell R Square) and 4 % (Nagelkerke R Square) of the variance in GHQ total score, and correctly classified 83% of cases. Table 3.23 shows neither predictor variables made a uniquely statistically significant contribution to the model.

3.3.4.5.3 GAD-7

Table 3.24: Logistic regression output cohesion and leadership predicting follow up GAD

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.460	.3229	-1.093	.173	2.030	1	.154	.631	.335	1.189
Cohesion Total	.279	.1299	.024	.533	4.597	1	.032	1.321	1.024	1.705
Leadership satisfaction	.428	.1333	.166	.689	10.298	1	.001	1.534	1.181	1.991

The full model was significant, χ^2 (3, N=269) = 29.557, p =.000, indicating the ability to distinguish between respondents who did and did not report symptoms of possible anxiety disorder at follow up. The model as a whole explained between 8.7% (Cox and Snell R Square) and 13.6 % (Nagelkerke R Square) of the variance in GAD total score, and correctly classified 80.4% of cases. Table 3.24 shows satisfaction with leadership made a uniquely statistically significant contribution to the model, the odds ratio indicated that for each increase in leadership dissatisfaction at follow up, respondents were just over one and a half factors more likely to report symptoms meeting possible caseness for GAD at follow up. Unit cohesion was also borderline significantly predictive of GAD-7 score, odds ratio indicated that those reporting less cohesion with members of their unit were just over one factor more likely to meet GAD-7 probable caseness with each increase in cohesion score (indicating increasing lack of cohesion).

3.3.4.5.4 PHQ-9

Table 3.25: Logistic regression output cohesion and leadership predicting follow up PHQ

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.267	.3046	-.864	.330	.770	1	.380	.765	.421	1.390
Cohesion Total	.330	.1212	.092	.567	7.396	1	.007	1.390	1.096	1.763
Leadership total	.461	.1205	.225	.697	14.634	1	.000	1.586	1.252	2.008

The full model was significant, χ^2 (3, N=270) = 33.770, p =.000, indicating respondents who did and did not report symptoms of possible depression at follow up could be

distinguished. The model as a whole explained between 11.5% (Cox and Snell R Square) and 17.2 % (Nagelkerke R Square) of the variance in PHQ total score, and correctly classified 77.9% of cases. Table 3.25 shows both satisfaction with leadership and unit cohesion made uniquely statistically significant contributions to the model, the odds ratios indicated that for each increase in leadership dissatisfaction at follow up, respondents were just over one and a half factors more likely to report symptoms meeting possible caseness for PHQ at follow up, and for each decrease in perceived cohesion with unit, respondents were just over one factor more likely to meet possible depression caseness.

3.3.4.5.5 Sleep satisfaction

Table 3.26: Logistic regression output cohesion and leadership predicting follow up sleep satisfaction

Parameter			95% Wald Confidence Interval		Hypothesis Test				95% Wald Confidence Interval for Exp(B)	
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)	Lower	Upper
Group number	-.672	.2878	-1.236	-.108	5.449	1	.020	.511	.291	.898
Cohesion Total	.401	.1259	.155	.648	10.157	1	.001	1.494	1.167	1.912
Leadership total	.110	.1196	-.125	.344	.844	1	.358	1.116	.883	1.411

The full model was significant, χ^2 (3, N=270) = 21.855, p =.000, indicating that a distinction could be determined between respondents who did and did not report dissatisfaction with sleep at follow up. The model as a whole explained between 5.9%

(Cox and Snell R Square) and 8.5 % (Nagelkerke R Square) of the variance in sleep dissatisfaction total score, and correctly classified 73.4% of cases. Table 3.26 shows perceived unit cohesion made a uniquely statistically significant contribution to the model, the odds ratio indicated that for each decrease in perceived cohesion with unit, respondents were almost one and a half factors more likely to report dissatisfaction with their sleep.

3.3.4.5.6 Sleep disturbance impact on functioning

Table 3.27: Logistic regression output cohesion and leadership predicting follow up sleep function

Parameter			95% Wald Confidence Interval		Hypothesis Test				95% Wald Confidence Interval for Exp(B)	
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)	Lower	Upper
Group number	-.522	.5977	-1.694	.649	.764	1	.382	.593	.184	1.914
Cohesion Total	.187	.2315	-.267	.641	.652	1	.419	1.206	.766	1.898
Leadership total	.074	.2105	-.338	.487	.124	1	.724	1.077	.713	1.627

The full model was not significant, χ^2 (3, N=134) = 2.173, p =.537, indicating that a distinction could not be determined between respondents who did and did not report that sleep disturbance impacted on their functioning at follow up.

3.3.4.6 Hypothesis four summaries

Symptoms of poor mental health at baseline were not significantly predictive of follow up ratings of leadership dissatisfaction or perceived low unit cohesion.

Probable GAD caseness at follow up was predictive of dissatisfaction with

leadership. Probable PHQ caseness at follow up was predictive of lower levels of perceived unit cohesion.

The majority of mental health measures at follow up were significantly predicted by unit cohesion and, in particular, leadership satisfaction scores; showing that those with higher levels of perceived unit cohesion and greater satisfaction with leadership reported lower fewer problematic mental health symptoms. As an individual predictor variable, satisfaction with leadership made a uniquely significant contribution to the model most frequently.

These results support the hypothesis that symptoms of poor mental health are significantly predictive of satisfaction with leadership and unit cohesion at the same time point. However symptoms of poor mental health at baseline were not significantly predictive of perceived low unit cohesion and leadership dissatisfaction at follow up.

3.3.5 Hypothesis five

Higher levels of combat exposure will be predictive of greater levels of unit cohesion and satisfaction with leadership.

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3.3.5.1 Predictors of perceived unit cohesion

Table 3.28: Logistic regression output combat exposure predicting unit cohesion

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.084	.1384	-.355	.188	.367	1	.545
Combat exposure	-.010	.0093	-.028	.009	1.050	1	.306

The full model was not significant, χ^2 (2, N=287) = 1.444, p =.486, indicating that a distinction could not be determined between respondents who reported high versus low perceived unit cohesion at follow up.

3.3.5.1.1 Predictors of leadership satisfaction

Table 3.29: Logistic regression output combat exposure predicting leadership satisfaction

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.063	.1487	-.354	.229	.179	1	.673
Combat exposure	-.018	.0096	-.037	.001	3.467	1	.063

The full model was not significant, χ^2 (2, N=279) = 3.548, p =.170, indicating that a distinction could not be determined between respondents who reported high versus low levels of satisfaction with leadership received at follow up.

3.3.5.2 Hypothesis five summaries

Levels of combat or operational exposure were not predictive of unit cohesion or leadership satisfaction.

3.3.6 Hypothesis six

Rank (measured at baseline) will be predictive of stigma endorsement (measured at baseline and follow up), mediated by symptoms of poor mental health.

3.3.6.1 Baseline stigma predicted by baseline mental health

Table 3.30: Logistic regression output rank and baseline mental health predicting stigma

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.522	.2165	.097	.946	5.801	1	.016
Rank	-.300	.2243	-.740	.140	1.788	1	.181
PCL score	.073	.0210	.032	.115	12.183	1	.000
Sleep satisfaction	.386	.2140	-.033	.805	3.255	1	.071
Sleep distress	1.099	.3873	.340	1.858	8.053	1	.005

The full model was significant, χ^2 (3, N=248) = 35.043, p =.000, however rank did not meet the p<.1 cut off for inclusion into logistic regression. The relationship between poor mental health and stigma was explored in hypothesis two, therefore logistic regressions including stigma and mental health measures were not repeated for this hypothesis.

3.3.6.2 Follow up stigma predicted by poor baseline mental health

Table 3.31: Logistic regression output rank and baseline mental health predicting stigma

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.341	.3087	-.264	.946	1.219	1	.270
Rank	-.152	.3545	-.847	.543	.183	1	.668
Tours completed	.077	.0743	-.069	.222	1.060	1	.303
GHQ total	.103	.0955	-.084	.290	1.169	1	.280
PHQ total	.266	.2643	-.252	.784	1.011	1	.315

The full model was not significant, χ^2 (5, N=269) = 10.201, p =.070, indicating that the model was not able to distinguish between respondents who reported one or more stigma items at follow up. Removal of outliers within this model did not alter the overall significance of the model or the predictive power of *rank*, therefore it was concluded that rank did not have a statistically significant effect on stigma reporting at follow up.

3.3.6.3 Follow up stigma predicted by poor mental health at follow up

Table 3.32: Logistic regression output rank and follow up mental health predicting stigma

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.272	.3072	-.330	.874	.785	1	.376
Rank	-.237	.3421	-.907	.434	.479	1	.489
Tours completed	.093	.0676	-.040	.225	1.889	1	.169
PCL total	.079	.0187	.042	.115	17.652	1	.000

The full model was significant, χ^2 (4, N=262) = 21.835, p =.000, indicating that a distinction could be made between respondents who reported one or more stigma items at follow up. However rank did not meet the p<.1 cut off for inclusion into logistic regression.

3.3.6.4 Hypothesis six summary

The analyses show that rank was not predictive of stigma endorsement at either baseline or follow up. The associations between poor mental health and stigma largely mirror the findings of hypothesis two; i.e. poorer mental health, particularly PCL probable caseness, is predictive of stigma endorsement at the same time point.

3.3.7 Hypothesis seven

Baseline symptoms of poor mental health will be predictive of problematic adjustment and difficulties with family relationships at follow up.

3.3.7.1 Transition

Table 3.33: Logistic regression output baseline GHQ predicting transition

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.385	.3036	-.980	.210	1.608	1	.205	.680	.375	1.234
GHQ total	.251	.0638	.126	.376	15.422	1	.000	1.285	1.134	1.456

The full model was significant, χ^2 (2, N=286) = 16.216, p =.000, indicating that respondents who did and did not report transition difficulties at follow up could be distinguished. However, the model indicated poor fit, as the Hosmer and Lemeshow value was <.05. Therefore a Chi-square test for independence (with Yate's continuity correction) was run, which indicated a significant association between transition at follow up and baseline GHQ score, χ^2 (1, n=287) =6.599, p=.010, phi =.165.

3.3.7.2 Spouse relationship change

Table 3.34: Logistic regression output baseline GHQ predicting spouse relationship change

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.547	.3693	-1.271	.177	2.193	1	.139	.579	.281	1.194

GHQ total	.388	.0717	.247	.528	29.239	1	.000	1.473	1.280	1.696

The full model was significant, χ^2 (2, N=250) = 31.167, p =.000, indicating that a distinction could be made between respondents who did and did not report that their relationship with their spouse had changed at follow up. The model as a whole explained between 10.9% (Cox and Snell R Square) and 18.4 % (Nagelkerke R Square) of the variance in relationship change, and correctly classified 85.6% of cases. Table 3.34 shows GHQ score made a uniquely statistically significant contribution to the model, the odds ratio indicated that for each increase in GHQ score at baseline, respondents were almost one and a half factors more likely to report that their relationship with their spouse had changed for the worse at follow up.

3.3.7.3 Happiness with spouse relationship

Table 3.35: Logistic regression output baseline GHQ predicting spouse relationship satisfaction

Parameter			95% Wald Confidence Interval		Hypothesis Test				95% Wald Confidence Interval for Exp(B)	
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)	Lower	Upper
Group number	-.545	.4969	-1.519	.429	1.202	1	.273	.580	.219	1.536
GHQ total	.382	.0822	.221	.543	21.646	1	.000	1.466	1.248	1.722

The full model was significant, χ^2 (2, N=252) = 18.690, p =.000, indicating that a distinction could be made between respondents who did and did not report feeling unhappy with their relationship with their spouse at follow up. The model as a whole explained between 6.1% (Cox and Snell R Square) and 14.5 % (Nagelkerke R Square) of the variance in relationship satisfaction, and correctly classified 92.5% of cases.

Table 3.35 shows GHQ score made a uniquely statistically significant contribution to the model, the odds ratio indicated that for each increase in GHQ score at baseline, respondents were almost one and a half factors more likely to report feeling unhappy with their relationship with their spouse at follow up.

3.3.7.4 Effect on children

The full model was not significant, and remained non-significant when the predictor variable reaching p<.4 was individual entered in to the model: χ^2 (2, N=153) = 4.134, p =.127, indicating that a distinction could not be determined between respondents who reported that their deployment had had an effect on their children and those who reported no effect.

3.3.7.5 Difficulty re-establishing relationship with children

Table 3.36: Logistic regression output baseline mental health predicting child relations

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.288	.3699	-1.013	.437	.608	1	.436	.749	.363	1.547
GHQ-12 total	.320	.1390	.048	.593	5.310	1	.021	1.378	1.049	1.809
GAD-2 total	-.639	.5979	-1.810	.533	1.141	1	.286	.528	.164	1.705
Sleep satisfaction	.824	.3813	.076	1.571	4.666	1	.031	2.279	1.079	4.811

The full model was significant χ^2 (4, n=151) =19.973, p=.001, indicating that a distinction could be made between those who reported a problem re-establishing a relationship with their children post-deployment and those who did not. The model as a

whole explained 12.4% (Cox and Snell R Square) and 16.6% (Nagelkerke R Square) of the variance in difficulty re-establishing relationship and correctly classified 68.2% of cases. Table 3.36 shows GHQ made a borderline statistically significant contribution to the model, the odds ratio indicated that those meeting caseness for GHQ at baseline were almost one and a half times more likely to report difficulty re-establishing a relationship with their children at follow up. Sleep satisfaction was also a borderline significant predictor variable, indicating that those who were more dissatisfied with their sleep at baseline were just over two factors more likely to report difficulties re-establishing a relationship with their children at follow up.

3.3.7.6 Hypothesis seven summaries

Hypothesis seven was supported as poor baseline mental health was predictive of difficulties with post deployment transition and family relationships. Baseline GHQ was the most highly significant predictor variable for post-deployment transition and relationship difficulties.

3.3.8 Hypothesis eight

Greater childhood adversity will be the strongest predictor of mental health scores at baseline and follow up.

3.3.8.1 Baseline PCL

Table 3.37: Logistic regression output combat exposure predicting PCL

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.397	.4950	-1.367	.573	.643	1	.423	.672	.255	1.774
Combat exposure	.097	.0241	.050	.144	16.256	1	.000	1.102	1.051	1.155

The full model was significant, χ^2 (2, N=291) = 17.545, p=000, indicating that respondents who did and did not meet PCL caseness at baseline could be distinguished. The model as a whole explained between 5.6% (Cox and Snell R Square) and 13.9% (Nagelkerke R Square) of the variance in PCL caseness and correctly identified 93.2% of cases. Table 3.37 shows only combat exposure made a unique statistically significant contribution to the model, the odds ratio indicated that respondents with higher rates of combat exposure were just over one factor more likely to meet caseness for PCL compared to those with lower combat exposure.

3.3.8.2 Baseline GHQ

Table 3.38: Logistic regression output predictors of GHQ

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper

Group number	-.323	.3662	-1.040	.395	.777	1	.378	.724	.353	1.484
Rank	-.807	.3685	-1.529	-.085	4.797	1	.029	INV	INV	INV
								2.242	1.088	4.608
Regular or reserve	-1.649	1.0239	-3.656	.358	2.593	1	.107	.192	.026	1.431
Combat exposure	.042	.0188	.005	.079	5.057	1	.025	1.043	1.005	1.082

The full model was significant χ^2 (4, n=291) =14.712, p=.005, indicating that those who met GHQ caseness at baseline could be distinguished from those who did not. The model as a whole explained 4.7% (Cox and Snell R Square) and 8.8% (Nagelkerke R Square) of the variance in GHQ caseness and correctly classified 87.7% of cases. Table 3.38 shows rank and combat exposure made borderline statistically significant contributions to the model; respective odds ratios indicated that those in lower ranks were just over two times more likely to meet baseline GHQ caseness and those who were more combat exposed were just over one factor more likely to meet GHQ caseness than those with low combat exposure.

3.3.8.3 Baseline GAD

Table 3.39: Logistic regression output predictors of GAD

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.044	.0639	-.169	.082	.464	1	.496
Alcohol total	.040	.0365	-.031	.112	1.209	1	.272
Service length	-.119	.1113	-.338	.099	1.151	1	.283
Ind. augmentee vs. formed unit	.061	.0634	-.063	.186	.935	1	.334
Aversive child experiences	.021	.0157	-.010	.052	1.747	1	.186

Table 3.39: Logistic regression output predictors of GAD

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.044	.0639	-.169	.082	.464	1	.496
Alcohol total	.040	.0365	-.031	.112	1.209	1	.272
Service length	-.119	.1113	-.338	.099	1.151	1	.283
Ind. augmentee vs. formed unit	.061	.0634	-.063	.186	.935	1	.334
Aversive child experiences	.021	.0157	-.010	.052	1.747	1	.186

The full model was not significant, χ^2 (5, n=291) =6.131, p=.294, indicating that it was not able to distinguish between respondents who did and did not meet GAD caseness at baseline.

3.3.8.4 Baseline PHQ

Table 3.40: Logistic regression output predictors of PHQ

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test				95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)	Lower	Upper
Group number	-.543	.3378	-1.205	.120	2.579	1	.108	.581	.300	1.127
Relationship status	.422	.5199	-.597	1.441	.659	1	.417	1.525	.551	4.226
Tours completed	.778	.3516	.089	1.467	4.902	1	.027	2.178	1.093	4.338
Combat exposure	.066	.0200	.027	.106	10.996	1	.001	1.069	1.028	1.111
Aversive childhood experiences	.070	.0637	-.055	.195	1.204	1	.273	1.072	.947	1.215

RESULTS

The full model was significant, χ^2 (5, N=286) = 18.513, p=002, indicating that respondents who did and did not meet PHQ caseness at baseline could be identified. The model as a whole explained between 5.5% (Cox and Snell R Square) and 9.4% (Nagelkerke R Square) of the variance in PHQ caseness and correctly identified 84.3% of cases. Table 3.40 shows only combat exposure made a unique statistically significant contribution to the model, the odds ratio indicated that respondents with higher rates of combat exposure were just over one factor more likely to meet caseness for PHQ compared to those with lower combat exposure.

3.3.8.5 Sleep satisfaction baseline

Table 3.41: Logistic regression output predictors of sleep satisfaction

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.697	.2570	-1.201	-.194	7.364	1	.007	INV 2.008	INV 1.214	INV 3.322
Combat exposure	.025	.0168	-.008	.058	2.230	1	.135	1.025	.992	1.060
Service length	-.489	.4044	-1.281	.304	1.461	1	.227	.613	.278	1.355
Individual augmentee vs. Formed unit	.241	.2569	-.263	.744	.878	1	.349	1.272	.769	2.104

The full model was borderline significant, χ^2 (4, N=243) = 12.097, p=017, indicating that it was able to distinguish between those reporting sleep dissatisfaction at baseline and those who were not dissatisfied, to the degree of borderline significance.

Table 3.41 shows responders in the second follow up group were two factors more likely to report being satisfied with their sleep at baseline.

3.3.8.6 Sleep disturbance baseline

Only two out of a total 208 item responders reported that their sleep difficulty impaired their functioning at baseline, therefore statistical analysis would provide inaccurate results due to low number of events within this variable.

3.3.8.7 Follow up PCL

Table 3.42: Logistic regression output predictors of PCL

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.068	.4751	-.999	.863	.021	1	.886	.934	.368	2.370
Relationship status	-.369	.9306	-2.193	1.455	.157	1	.692	.691	.112	4.284
Happy with relationship	1.201	.4161	.386	2.017	8.334	1	.004	3.324	1.471	7.514
Difficulty reestablishing relationship with child	1.843	.5131	.837	2.848	12.896	1	.000	6.312	2.309	17.255

The full model containing all predictor variables was significant χ^2 (4, n=142) =28.416, p=.000, indicating that those who did and did not meet PCL caseness at follow up could be identified. The model as a whole explained 17.5% (Cox and Snell R Square) and 27.6% (Nagelkerke R Square) of the variance in PCL caseness and correctly classified 82.4% of cases. Table 3.42 shows satisfaction with spouse relationship and difficulty re-establishing relationship with own children at follow up made uniquely statistically significant contributions to the model, respective odds ratios

indicated that those reporting dissatisfaction with relationship were just over three times more likely to meet follow up PCL caseness; and those who had difficulty re-establishing relationship with their children were just over six times more likely to meet PCL caseness than not reporting difficulties.

3.3.8.8 Follow up GHQ

The linear regressions containing predictor variables <.4 then <.1 were significant, however the logistic model did not retain significance, χ^2 (3, n=213) =3.527, p=.317, indicating that the overall logistic model was not able to distinguish between those meeting caseness on the GHQ at follow up versus those not meeting caseness.

3.3.8.9 Follow up GAD

The linear regression with all predictor variables <.4 contained outliers and when re-run without the outliers childhood experiences no longer met the <.1 threshold for inclusion in the next stage of testing. Therefore the GAD total variable was transformed and the linear regression re-run, which revealed three predictor variables which reached the p <.1 significance level, these were re-run in linear regression and all reached the p <.05 requirement for inclusion in the logistic regression.

One of the categorical independent variables (relationship status) had fewer than 10 events in each level as only six respondents answered that they were not in a relationship) therefore this variable was included in a Chi-Square test of independence and the other two independent variables included in the logistic model.

Table 3.43: Logistic regression output predictors of GAD

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	.320	.4408	-.544	1.184	.528	1	.468	1.377	.581	3.268
Relationship satisfaction	1.098	.3429	.426	1.770	10.251	1	.001	2.998	1.531	5.871
Reestablishing child relations	1.207	.4430	.339	2.075	7.424	1	.006	3.344	1.403	7.968

The full model containing all predictor variables was significant χ^2 (3, n=279) =19.397, p=.000, indicating that those who met GAD caseness at follow up could be distinguished from those who did not. The model as a whole explained 12.4% (Cox and Snell R Square) and 19.3% (Nagelkerke R Square) of the variance in GAD caseness and correctly classified 79.7% of cases. Satisfaction with spouse relationship and difficulty re-establishing relationship with own children at follow up made uniquely statistically significant contributions to the model, respective odds ratios indicated that those reporting dissatisfaction with relationship and difficulty re-establishing relationship with their children were approximately three times more likely to meet follow up GAD caseness.

Relationship status was not significantly predictive of follow up GAD caseness, Fisher's Exact Test (n=279) p=0.427.

3.3.8.10 Follow up PHQ

Table 3.44: Logistic regression output predictors of PHQ

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.226	.4298	-1.068	.616	.276	1	.599	.798	.344	1.852
Relationship status	-1.416	.9404	-3.259	.427	2.268	1	.132	.243	.038	1.533
Tours completed	.140	.0794	-.016	.295	3.091	1	.079	1.150	.984	1.343
Reestablishing child relations	1.006	.4329	.158	1.855	5.401	1	.020	2.735	1.171	6.389
Alcohol use	.614	.3173	-.008	1.236	3.740	1	.053	1.847	.992	3.440

The original linear model contained outliers; removal of these did not alter the significance of the overall model or predictor variables, so the variable was not transformed. The full logistic model containing all predictor variables was significant χ^2 (5, n=142) =21.200, p=.001, indicating that it was able to distinguish between those who did and did not meet PHQ caseness at follow up. The model as a whole explained 18.1% (Cox and Snell R Square) and 27.4% (Nagelkerke R Square) of the variance in PHQ caseness and correctly classified 80.4% of cases. Table 3.44 shows that for each increase in rated difficulty re-establishing relations with own children, respondents were almost three factors more likely to meet PHQ caseness. For each increase in alcohol use on the AUDIT scale, respondents were almost two times more likely to meet PHQ caseness.

Relationship status did not have sufficient values at each level of the variable, therefore a Chi-Square test (with Yate's continuity correction) was run, which revealed there was no significant relationship between relationship status and PHQ score at follow up, Fisher's Exact Test (n=279), p=.571. Satisfaction with spouse relationship was borderline significantly predictive of PHQ, χ^2 (1, n=243) = 4.226, p = .040, phi = .150.

3.3.8.11 Follow up sleep satisfaction

The Hosmer and Lemeshow test revealed that the final logistic model was a poor fit (p<.05), therefore a Chi-Square test was run (with Yate's continuity correction). The Chi-Square test indicated a significant association between sleep dissatisfaction and difficulties re-establishing relationship with own children at follow up, χ^2 (1, n=147) = 9.343, p = .002, phi = .267.

3.3.8.12 Follow up sleep difficulties impact on function

Table 3.45: Logistic regression output predictors of sleep affecting function

Parameter			95% Wald Confidence Interval		Hypothesis Test				95% Wald Confidence Interval for Exp(B)	
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)	Lower	Upper
Group number	-.330	.7596	-1.819	1.159	.189	1	.664	.719	.162	3.186
Relationship change	1.641	.7720	.128	3.154	4.517	1	.034	5.159	1.136	23.424
Difficulty re-establishing child relationship	2.391	1.1845	.069	4.712	4.073	1	.044	10.920	1.071	111.292

The full model containing all predictor variables was significant χ^2 (3, n=72) =12.551, p=.006, indicating that a distinction could be made between those who did and did not report difficulty sleeping to impact on their functioning at follow up. The model as a whole explained 15.8% (Cox and Snell R Square) and 28.5% (Nagelkerke R Square) of the variance in sleep problems impacting functioning and correctly classified 86.1% of cases. Due to the lower N within this regression relative to the other models, validity of the model fit is uncertain, however the Hosmer and Lemeshow test statistic reports a good model fit (.538) and the significance within the model is <.01. No predictor variable made a uniquely significant contribution to the model, although were significant to a borderline degree.

3.3.8.13 Hypothesis eight summaries

The hypothesis was not supported as childhood adversity was not a significant predictor of poor mental health at either baseline or follow up.

There was a trend across predictor variables to predict poor mental health at the same time point, as at baseline, combat exposure was the most common predictor variable as it significantly predicted caseness for the PCL, GHQ and PHQ at baseline.

At follow up, dissatisfaction with relationship with spouse and difficulty re-establishing relationships with own children were the most commonly predictive variables, significantly predicting PCL and GAD. Satisfaction with relationship was also a significant predictor for follow up PHQ and difficulty re-establishing relationship with children significantly predicted sleep dissatisfaction. Alcohol use was a borderline significant predictor variable for PHQ score at follow up.

4 Discussion

4.1 Main findings

Rates of probable mental health disorder and functional impairment rose from baseline to follow up. Baseline symptoms of poor mental health were predictive of follow up symptoms of poor mental health. Post deployment functional impairment was related to meeting probable caseness for PTSD, both of which rose significantly for a proportion of participants post deployment.

Greater satisfaction with leadership and unit cohesion were predictive of fewer symptoms of poor mental health at follow up. More symptoms of CMD at baseline were predictive of lower levels of unit cohesion at follow up.

Poorer mental health at baseline was predictive of more problems with transition and family relationships during the follow up period. Combat exposure was significantly predictive of poorer baseline mental health. Problematic relationships with family and own children were predictive of follow up mental health difficulties.

Stigmatising beliefs about mental health disorder and perceived barriers to care rose from baseline to follow up across all ranks. Symptoms of poor mental health were predictive of greater endorsement of stigmatising beliefs at the same time point.

4.2 Demographics

4.2.1 Characteristics of follow up sample

4.2.1.1 Service background

There were no significant differences between the two follow up groups, however the follow up sample as a whole did contain more RAF personnel and fewer

RN, RM and reserve personnel than would be expected when compared to the overall UKAF.

The explanation for this may be due to baseline recruitment, as the data collection period was extended in order to help increase response rate; therefore a greater proportion of RAF personnel may have been approached regarding participation, due to their shorter, more frequent, operational tours than Army personnel. Fewer RM and RN personnel may have attended decompression during the recruitment period, or they re-deployed during the follow up period therefore making them unavailable for follow up participation.

4.2.1.2 Engagement type

There were fewer reserve personnel who participated in the current study than would be expected given their percentage make up of the UKAF. However the number of deployed reserve forces was in keeping with the percentage who responded to the current study (Browne et al., 2007), so it can be concluded that the reserve population within the current study were representative of the deployed reserve forces population.

4.2.1.3 Rank

Junior ranks and younger personnel were underrepresented and officers were overrepresented. Previous research has shown that mental health difficulties tend to be more prevalent amongst junior ranks (Greenberg et al., 2008; Iversen et al., 2008). Junior ranks generally express more stigma beliefs towards reporting symptoms of poor mental health (Greenberg et al., 2011; Iversen et al., 2009), therefore it could be hypothesised that junior ranks were reluctant to take part given the mental health focus of the current research. Ways of increasing involvement of junior personnel in research is discussed in section *4.9.1.2*.

4.2.1.4 Gender

Women were overrepresented in the current sample in relation to the UKAF as a whole. This reflects the patterns shown in data produced by Defence Analytical Services and Advice (2011), that women seek help more commonly than men for mental health difficulties. A greater emphasis could have been placed on encouraging males to take part in the research by targeting chasing responses from this group. However, this would then not have been random sampling of the available population and the selection of such methods should be detailed with a clear rationale; future replications of this study could attempt such selection for follow up in order to gain as representative a sample as possible. Within the current study, the choice was taken to maximise overall response rate and apply the same follow up protocol to each participant.

4.2.2 Operational characteristics

There were no statistical differences between the operational characteristics of the personnel within either follow up group.

4.2.2.1 Harmony Guidelines

The majority of the sample had completed two or more pervious tours. However, a small proportion had been re-deployed within a given timeframe for a cumulative period (classed as breech of 'Harmony Guidelines'). This may represent the need for certain occupational groups or skill sets to be deployed to a greater degree than others, such as combat troops or explosive ordnance disposal (EOD). Therefore more regular deployments for certain populations make mental health research particularly pertinent.

4.2.2.2 Combat exposure

Most respondents were deployed within a main operating base and over half of the sample reported being exposed to two or more potentially traumatic operational events (out of 17 possible events). Evidence differs regarding operational exposure and mental health difficulties; in certain studies, combat exposed personnel have reported higher rates of PSTD symptomatology and alcohol intake than non-combat troops (Hotopf et al., 2006; Fear et al., 2010). However Peterson et al (2010) reported that non-combat troops deployed in Iraq were six times more likely to report PTSD symptoms than non-combatants deployed to Qatar. Therefore highlighting that mental distress can occur independently of operational role and is not limited to those engaged in direct combat, or deployed in a forward operating location.

4.2.3 Non-responder analysis

The demographic differences highlighted in the non-responder analysis showed that personnel from higher rank, females or those over 24 years of age were more likely to respond, which was in keeping with the differences found when comparing the study sample to the overall UKAF. Potential reasons behind these differences are therefore discussed above.

The only unexpected differences were that significantly more individual augmentees and reserve forces responded to follow up than those who did not. It is possible these personnel also comprised a proportion of those in higher ranks and over 24 years of age for instance.

There were no operational differences between responders and non-responders, this shows that those deployed to a more forward or combat heavy environment were no more or less likely to respond than those deployed in a main operating base for instance.

Those with higher GHQ-12 scores at baseline were more likely to respond to follow up. This was the only mental health measure to a significant difference between responders and non-responders. It is unclear why this measure was the only to show significance regarding follow up responding, as the GHQ-12 and GAD-2 at baseline had the largest group of positive cases in comparison to the other mental health measures. It could be hypothesised that GHQ-2 and GAD-2 would have greater power to detect differences between responders and non-responders; however meeting GAD-2 caseness was not significantly associated with follow up responding.

Follow up responders endorsed higher stigma beliefs than non-responders. This was unexpected as it could be hypothesised that high stigma regarding mental ill health would make someone *less* likely to respond to a mental health survey. However, subsequent sections shall discuss, stigma reporting generally increased from baseline to follow up, as did symptoms of poor mental health, so greater stigma endorsement amongst responders may be a reflection of this general increase from baseline to follow up. Also, as the follow up questionnaire was anonymous, those with high stigma beliefs may have felt more able to express them as respondents were assured that no answers would be followed up as a result of completing the follow up questionnaire.

4.3 Data context

4.3.1 Mental health caseness and functional impairment

Hypothesis one explored mental health scores from baseline to follow up in more detail, however preliminary analyses revealed that symptoms of poor mental health increased from baseline to follow up. Respondents also reported an increase in functional impairment experienced as a result of symptoms of possible post traumatic stress from baseline to follow up. The occurrence of increased symptoms of poor

mental health and functional impairment has both individual and organisations implications, and this highlights a group of personnel who may benefit from further support.

The presence of symptoms can become problematic if they reach clinical significance, or impact in a way that the individual either chooses not to report or does not recognise the presence of mental health difficulties. For instance, amongst military personnel, optimal functioning and concentration is required for safety critical tasks such as handling a gun and detecting roadside bombs, which symptoms of poor mental health may impair.

Increasing awareness of mental health symptom recognition and 'mental health literacy' (Jorm et al., 1997) was highlighted by Iversen et al. (2010) to help recognise the symptoms of poor mental health. Iversen et al. (2010) suggest that a reluctance to seek help was related to poor recognition of mental disorders. This is not only limited to a military population as research involving the general population has shown that 39% of the Australian population recognised the description of depression from a vignette (Jorm et al., 1997) and men recognised mental ill health less frequently than women (Wright et al., 2005).

As a homecoming mental health brief is attended by all who complete decompression, personnel may benefit from additional psychoeducation strategies after homecoming. This as well as other implications are discussed in more detail in section *4.7*.

4.4 Self reported general symptoms and help seeking

The majority of respondents reported that they had not experienced a stress, emotional, relationship, family or alcohol problem since homecoming. The specific

mental health measures showed that symptoms of poor mental increased from baseline to follow up, which may indicate that more subtle questioning or the inclusion of additional topic areas may have identified the symptom increase in this initial section of the questionnaire. .

Research has shown that both military personnel and the general population are reluctant to seek help from medical professionals when experiencing symptoms of poor mental health (Iversen et al., 2010). Reluctance to seek help for mental health difficulties may be particularly pertinent within a military population as their eligibility for redeployment is dependent on their health; (Wilson et al., 2009) termed this the 'healthy warrior effect', as only healthy personnel re-deploy. Therefore there are organisational implications of poor mental health as the successful execution of future operations is dependent on personnel being fit to re-deploy.

The current study found similar rates of help seeking from medical professionals as those reported by Iversen et al. (2010). Although the majority of the current sample reported that when they *did* seek help, this was from their Medical Officer or GP, the next most favoured source of support was spouse or military friends. Greenberg et al. (2003) found respondents tended to turn to informal support networks, rather than medical professionals to disclose mental health concerns.

Just over half of respondents who identified that they were currently experiencing a stress or emotional problem said that they would be interested in receiving help for it. Although this was based on a small proportion of respondents, this supports the pattern discussed in previous literature.

There are potential career implications of a declaration of mental disorder that may contribute to reluctance to report mental ill health to medical professionals amongst

military personnel, such as those with roles involving handling weapons or piloting aircraft (Iversen et al., 2010).

Although the majority of those interested in receiving help for a stress or emotional problem met cut off for probable mental health caseness, a much smaller proportion of individuals identified themselves as currently experiencing a stress or emotional problem than the mental health measures identified. This may highlight the need for increased or at least continued, mental health awareness and promotion amongst this population. It may also be indicative of the tendency for self report measures of mental ill health to overestimate the presence of symptoms (Peterson et al., 2010). Due to the individual interpretation required for completion of self report measures, individuals may have reported symptoms of general anxiety as those of PTSD for instance, which can overinflate in the reported caseness (Fear et al., 2010; Polusny et al., 2010). This further highlights that mental health measures indicate probable caseness rather than clinical diagnoses (Du Preez et al., 2012).

4.4.1 Transition and readjustment

The most commonly reported transition concerns were feeling other people did not understand what the service person had gone through and not wanting to talk about operational experiences. The reluctance to talk about deployment experiences supports the literature regarding reluctance to seek help, as detailed previously and in subsequent sections. Perceiving that others do not understand one's own experiences may also increase reluctance to seek help for post deployment concerns. This may also be linked to the increase of PTSD symptoms in a proportion of respondents as avoidance of the trauma memory is one of the main features of PTSD (Ehlers and Clarke, 2000).

However, personnel may value both mental health professionals being separate to their unit command, and having space away from their military peers in order to reflect. Individuals may benefit from choosing which help seeking route they would favour, should a peer delivered support system be developed in addition to existing mental health services (discussed in section *4.7 'Implications'*).

Greater transition problems were associated with more symptoms of poor mental health and are explored more extensively in the *hypothesis seven* discussion. This indicated a group of personnel reporting symptoms of poor mental health in conjunction with expressing post deployment difficulties, including not wishing to talk about such concerns with others. This is a key issue both at an individual and organisational level, as the health of the UKAF personnel are integral to the continued success of UK military operations and the safety of personnel involved.

4.4.2 Stigma

Personnel reported higher levels of stigma at follow up than they did at baseline, which reflects the previous results discussed and highlights a trend towards reluctance to help seek amongst the follow up sample. Stigma is discussed in more detail in *section 4.5.2: hypothesis two* and *section 4.5.6. hypothesis six*.

4.5 Hypothesis review

4.5.1 Hypothesis one

Hypothesis one predicted that symptoms of poor mental health would decrease from baseline to follow up. This hypothesis was not supported as symptoms of poor mental health increased for all but one measure by follow up. PTSD symptoms significantly increased by follow up, however this was not a clinically significant

increase as the mean difference was three points on the PCL-C scale. This is an important finding however, and supports the US literature, which has also shown rates of probable PTSD to increase over follow up. This is in spite of the operational factors varying between US and UK troops, which could arguably put US troops at greater risk of possible PTSD symptomatology. Such as US troops generally deploying for longer and being comprised of more junior ranks than UK (Forbes et al., 2011; Hotopf et al., 2006; Sundin et al., 2010; Mehlum, Koldsland, & Loeb, 2006). The increase in possible PTSD symptoms also supports the finding by Fear et al. (2010) who found a statistically significant increase in PCL score over follow up within a UK sample. Again, Fear et al did not report a clinically significant difference, but it does highlight that current rates of possible PTSD symptoms may be representative of the beginning of a clinically significant rise.

The Fear et al. (2010) research covered a much longer time scale than the current research as the data collection period spanned two years and followed up a cohort who had provided mental health data between three and six years previously. As the current research also detected a statistically significant difference from a smaller sample within a shorter time frame, this further highlights the need to monitor symptom change over time (discussed further in section *4.7 'Implications'*).

The one mental health measure to decrease from baseline to follow up was sleep satisfaction, indicating a greater level of sleep satisfaction at follow up compared to baseline. This may be reflective of personnel at baseline sleeping in unfamiliar environments, perhaps in a combat zone, or working on irregular shift patterns in order to perform patrols for instance. However, despite greater sleep satisfaction at follow up, respondents reported that sleep problems interfered with their daily functioning more at follow up than they did at baseline. There may be a greater opportunity for sleep

difficulties to impact on daily functioning after homecoming, as on operation the completion of safety critical tasks, such as detecting roadside bombs, may have masked the effects of sleep deprivation which no longer occurs after return to a non-combat environment.

As with the demographic details, there were no statistical differences between the two follow up groups with regards to poor mental health symptom reporting; this indicates that patterns were consistent amongst the current sample and not confined to a particular unit or combat exposed group.

4.5.2 Hypothesis two

Hypothesis two predicted that those with poorer mental health would endorse more stigma beliefs. This hypothesis was partially supported, as stigma and mental health scores were directly related when measured at the *same* time point, however, mental health scores at baseline were not predictive of subsequent stigma endorsement. Research has shown a consistent link between stigma and poor mental health symptoms (e.g. Gould et al., 2010; Hoge et al., 2004; Greene-Shortridge et al., 2007; Langston et al., 2010) when measured at the same time point.

Baseline stigma was found to be most significantly predicted by PTSD symptoms. Stigma at follow up was most significantly predicted by symptoms of general anxiety, PTSD and depression symptoms were predictive to a borderline degree. Greene-Shortridge et al. (2007) proposed that high stigma levels may be associated with poor mental health due to the cognitive distortions experienced as a result of mental illness, such as negative bias and 'catastrophising' predictions, which in some cases may link to the stigmatising beliefs reported in the current study such as "I would be seen as weak".

As poor mental health symptoms and stigma endorsement are related at the same time point, this is likely to reduce someone's likelihood of seeking help. This pattern was also reflected in 'data context' discussed previously and is important, as previous literature has highlighted that those potentially most in need of help are the ones least likely to access it (e.g. Iversen et al., 2010; Kehle et al., 2010).

Figures tracking the level of stigma reporting in the military show that levels of stigma reporting have decreased overall from 2008 to 2011 (Osario, Jones & Fertout, in press; Greenberg, 2008) which suggests that beliefs are changing and anti-stigma campaigns are taking effect. However the current results show that stigma is still a barrier to accessing care for a proportion of military personnel, which highlights this as an area that still requires intervention.

4.5.3 Hypothesis three

Hypothesis three predicted that poor mental health at follow up would be strongly predicted by poor mental health at baseline. The results showed that this hypothesis was supported as out of six follow up mental health outcomes, three were highly significantly predicted and two were borderline significantly predicted by baseline mental health outcomes.

This finding is perhaps not surprising, but highlights that monitoring individuals after homecoming for presence of problematic mental health symptoms is important. Directly following up individuals over a certain cut off score raises ethical questions as well as increasing the likelihood of systematic underreporting of symptoms (Jones et al., 2012) if individuals know that they would be identified individually from their responses. This therefore poses a difficult question, the answer of which being beyond the scope of this research; a vulnerable group has been highlighted within the current

research with a trend towards increasing difficulties post deployment. Military commanders and policy makers therefore have the option to act upon this information and use it to alter current processes to directly target an 'at risk' group.

The greater use of peer delivered mental health assessment programs may provide a more accessible link between military personnel, mental health awareness and accessing support (discussed further in *4.7 'Interventions').*

4.5.4 Hypothesis four

This hypothesis predicted that higher unit cohesion and leadership satisfaction would be predictive of better mental health. Also, that better mental health at baseline and follow up would be predictive of higher unit cohesion and leadership satisfaction.

This hypothesis was largely supported, as for the majority of mental health outcomes those who reported greater unit cohesion and leadership satisfaction were less likely to report symptoms of poor mental health.

This finding supports the literature which has shown higher cohesion and greater perceived interest from superiors are linked to lower rates of probable mental ill health caseness (e.g. Iversen et al., 2008; Jones et al., 2012; DuPreez et al., 2012). Ahronson and Cameron (2007) highlighted a relationship between group identification and psychological well being, as perceived ties between group members and the emotional value of being part of a group were both positively related to self esteem and negatively related to depression. Self efficacy regarding group work can also bolster one's adjustment through goal attainment as part of group membership (Cameron, 1999).

Symptoms of CMD and depression are associated with a reduction in self esteem (e.g. Fennel, 1997) and a reduction in goal attainment through cycles of negative reinforcement; low mood causes a reduction in activity, leading to further reduction in

mood (Beck, 1976). Within the current study, CMD symptoms at baseline were predictive of low unit cohesion at follow up; and leadership dissatisfaction was predictive of CMD at follow up. These findings suggest a reciprocal relationship between both mental health and leadership satisfaction and unit cohesion. Symptoms of CMD include not feeling that one is "playing a useful part in things", not being able to enjoy normal day to day activities and losing confidence in oneself. Experiencing such symptoms, with associated negative distortions may impact one's perceived cohesion with members of their unit. For instance, losing confidence in one's ability to play a useful part in the functioning of the unit due to the presence of CMD symptoms, may lead to withdrawal from certain activities previously completed, thereby 'confirming' the belief of suboptimal functioning, leading to further loss of confidence and continued withdrawal from engaging with the unit as desired.

A similar process may explain the link between self reported symptoms of depression at follow up with both low perceived unit cohesion and leadership dissatisfaction. As highlighted in the Beck (1976) cognitive model, negative mood can lead to negative cognitive distortions, which exacerbate negative mood. Cognitive distortions influence one's perception of their own ability and their views of others; negative predictions about feared consequences may lead to withdrawal from unit activities and the perception of unfair treatment by unit leaders. Anxiety at follow up was shown to be predictive of leadership dissatisfaction; the relationship between the two may be similar to the processes outlined above, as individuals may be more susceptible to threat cues and infer catastrophic misinterpretations (e.g. Clark, 1986). With regards to leadership dissatisfaction, anxious individuals may perceive higher threat to individuals in the unit and thereby perceive that leaders have not shown sufficient concern in relation to this overestimated sense of threat. Or, in the case of

social anxiety (e.g. Clark and Wells, 1995), anxious individuals may perceive leaders to be embarrassing juniors, or feel themselves that they have been embarrassed in front of other unit members more frequently than someone who does not experience symptoms of anxiety to the same degree.

High cohesion and leadership satisfaction have also been shown to be protective when units are combat exposed (Mulligan et al., 2010). Pietrzak et al. (2010) highlighted that resilience mediated the relationship between unit support, and symptoms of PTSD and depression. Resilience was defined as successful adaptation or change when faced with adversity and has been linked to bolstering unit cohesion through promoting perceived personal control and self efficacy, in turn leading to active coping styles and reappraisal of stressful situations (Pietrzak et al., 2010; Sumer et al., 2005; Benight and Harper, 2002.

The current results suggest that unit cohesion and leadership satisfaction are factors that may be focused on by the UKAF in order to help buffer the potential adverse effects of deployment or combat exposure. This was also highlighted by Du Preez et al. (2012); discussion of the implications of these results is developed in section *4.7.*

4.5.5 Hypothesis five

This hypothesis predicted that those with higher levels of combat and operational exposure would show greater levels of unit cohesion and leadership satisfaction. The hypothesis was not supported as neither combat nor operational exposure were significantly related to unit cohesion and leadership satisfaction. This finding did not support previous research, which has shown that more combat exposed

personnel reported greater levels of unit cohesion and leadership satisfaction (e.g. Sundin et al., 2010, Forbes et al., 2011).

As the measures of combat and operational exposure included all personnel, it is possible that an effect was not detected due to a much greater instance of those who experienced very few base attacks, perhaps performing a support role at a main operating base for instance. Although the current study was sufficiently powered overall, a sample including a greater number of heavily combat exposed troops may have had more power to detect a relationship between these factors more specifically. Despite evidence of high interpersonal cohesion within combat troops, King (2006) highlighted that effective cohesion during combat to execute operational tasks can occur in the context of poor interpersonal cohesion. Therefore the current results may be reflecting some of the patterns King (2006) detailed as effective combat units do not necessarily display high levels of unit cohesion. Given the link between unit cohesion and leadership satisfaction highlighted previously, the current hypothesis findings may indicate that interventions to help increase cohesion and leadership satisfaction would be applicable to all personnel regardless of combat role.

4.5.6 Hypothesis six

This hypothesised that rank would be predictive of stigma endorsement, and this would be mediated by symptoms of poor mental health. The results indicated that rank was not individually predictive of stigma at baseline or follow up and therefore the hypothesis was not supported.

Research has previously shown that individuals from more junior ranks endorse more stigmatising beliefs regarding accessing mental health treatment than those from senior ranks (Greenberg et al., 2011). As the current study included proportionately

fewer personnel from lower ranks, there may not have been sufficient power to detect a difference. Another explanation may be that stigma levels reported within this study reflect a general pervasiveness of stigma, regardless of rank. This would further emphasise the need for the anti-stigma message to be targeted at all, given that poor mental health continues to be a predictor of greater stigma endorsement (discussed further in section *4.7 'Implications'*).

4.5.7 Hypothesis seven

This hypothesis predicted that baseline symptoms of poor mental health would be predictive of problematic adjustment and difficulty with family relationships at follow up.

The hypothesis was supported, as symptoms of poor mental health at baseline were significantly predictive of more relationship difficulties with spouse and own children after homecoming as well as greater transition difficulties. The GHQ-12 was the most significant individual predictor variable, indicating that of all the mental health measures used, this had the most power to predict relationship and transition difficulties at follow up.

General post deployment adjustment difficulties, measured using the transition scale, were significantly predicted by poor baseline mental health. Doyle et al. (2005) also reported that returning personnel could experience difficulty resuming roles with their spouse from disciplining their children to completing household tasks. It follows that symptoms of CMD, for instance trouble concentrating, sleeping and overcoming difficulties, would impact on the transition back into a non-combat environment which brings a change in routine and role which the individual has to adapt to.

The majority of respondents reported that other people had not understood what they had been through and a higher proportion of the sample in the current study reported transition difficulties than they did possible PTSD symptomatology. This supports the finding of Adler et al. (2011) who also highlighted such feelings of alienation could occur independently from symptoms of possible PTSD. This supports the need for measuring transition as a separate process to mental health symptomatology as although the two can occur in conjunction, transition difficulties can also arise individually.

Spouse relationship dissatisfaction and change for the worse after homecoming were significantly predicted by symptoms of CMD at baseline. Symptoms such as feeling under strain, not being able to enjoy day-to-day activities and not feeling able to face up to one's problems may negatively impact interaction with spouse and decrease perceived problem solving abilities. For instance, the most commonly reported transition difficulty was that 'people have not understood what I have been through', this belief may exacerbate relationship difficulties through a reluctance to communicate problematic symptoms of CMD due to the belief that others 'do not understand'.

The mental health of the spouse for whom personnel are returning to is also worthy of consideration, although not measured in this study. It has been shown that spouses can experience severe depression in up to 20% of cases whilst their partner is deployed, particularly during critical times such as pregnancy and if their partner's deployment is extended (de Burgh, White, Fear, & Iversen, 2011). Therefore future research could explore whether the mental health of the non-deployed spouse mediates ratings of relationship and transition difficulties in the individual returning from deployment.

Poor baseline mental health was also borderline significantly predictive of difficulty re-establishing relationships with one's own children after deployment, the most significant predictor variable was symptoms of CMD. It is possible that symptoms of CMD, such as feeling under strain and not feeling that they are playing a useful part in things, make it harder for the individual to adjust both to resuming a parental role and potentially adjusting to their child having matured whilst they have been deployed (de Burgh, White, Fear, & Iversen, 2011).

The impact of post deployment transition and relationship difficulties will arguably exacerbate existing symptoms of poor mental health; which may in part reflect the increase in symptoms of poor mental health from baseline to follow up shown in the current study. This supports the research conducted by Milliken et al. (2007) who highlighted the need for more sources of support for personnel during transition due to the increased risk of mental health difficulties during this time.

The relationship between meeting mental health caseness at baseline and reporting transition difficulties at follow up, such as feeling let down by others and finding it difficult to get back to normal activities, could lead to increased feelings of isolation and reluctance to seek help. As previous research (e.g. Iversen et al., 2010) and the current results show, military personnel are reluctant to seek help for mental health symptoms. However, the current study indicates that the largest proportion of help was sought from a medical professional which shows that those who *are* requesting help are mostly doing so from professionals; however the overall number of those seeking help in proportion to those reporting symptoms of poor mental health and functional impairment is low.

4.5.8 Hypothesis eight

This hypothesised that greater childhood adversity would be the strongest predictor of symptoms of poor mental health at baseline and follow up. The hypothesis was not supported, as the most significant predictor for poor baseline mental health was high combat exposure and the most significant predictors for poor mental health at follow up were spouse relationship dissatisfaction and difficulty re-establishing relationships with own children.

The finding regarding predictors of poor mental health at follow up reflects the social support literature in that estrangement from family and spouse is associated with poorer transition after homecoming (Doyle et al., 2005; Iversen et al., 2008). This effect was shown in independence of pre-deployment mental health measurement (Rona et al., 2009) therefore supports *post*-deployment mental health assessment.

Post deployment social support has been shown to help mediate symptoms of PTSD and depression by bolstering adaptive coping strategies (Holahan et al., 1995), reducing engagement in high-risk behaviours (Muris et al., 2001) and promoting self efficacy (Hays et al., 2001). Greater resilience has also been linked to seeking support from social networks when needed (Sharkansky et al., 2000). Therefore social support appears to be a concept which can be utilised to help buffer the potential adverse effects of deployment and or readjusting to the home environment, development of this is discussed in section *4.7 'Implications'*.

It was unexpected that childhood experiences did not show a relationship with poor mental health symptoms at baseline or follow up as this has been a consistent link shown in the literature (e.g. Iversen et al., 2007; MacManus et al., 2011). Iversen et al. (2007) found that pre-enlistment vulnerabilities of childhood adversity and behavioural disturbance were more common in young, single men within the Army. It is possible

that due to the higher proportion of senior ranks, personnel over the age of 24, women and RAF personnel in the current sample than would be expected in the UKAF as a whole, an effect of childhood adversity was not shown partly due to these factors.

4.6 Summary of findings

Overall, the results show a statistically significant increase in the symptoms of possible PTSD and associated functional impairment and a general increase in the majority of other mental health outcomes from baseline to follow up. Symptoms of poor mental health were predictive of stigma endorsement at the same time point. Symptoms of poor mental health at baseline were predictive of symptoms of poor mental health at follow up. Those who reported less unit cohesion and less satisfaction with the leadership they receive were more likely to report symptoms of poor mental health. Combat and operational exposure were not predictive of perceived unit cohesion or leadership satisfaction, and stigma was displayed within the current sample, irrespective of rank. Poorer baseline mental health was predictive of transition difficulties, and relationship difficulties with spouse and own children at homecoming. Finally, combat exposure was the most significant predictor of poor baseline mental health from a variety of demographic and operational predictors, and satisfaction with spouse relationship and difficulty re-establishing relationship with own children were the most predictive of poor mental health at follow up.

4.7 Implications

The importance of maintaining the health of the UKAF is key at individual and organisational levels, as with the continuation of deployments in the context of service reconfigurations, individuals must be able to perform their role in a testing organisational and political climate.

The results detailed in the previous discussion suggest a variety of different avenues that may be utilised to help decrease symptoms of poor mental health and to increase help seeking for those who require it, the following discussion aims to identify how the current findings may influence practice.

4.7.1 Increasing symptom recognition

Reporting of possible anxiety and or depression increased from baseline to follow up, although for the majority of measures, this was not significant. The current results found a significant increase in PTSD symptom reporting over follow up, in keeping with the Fear et al. (2010) study. As the current study was conducted over a shorter time period with a smaller sample size than Fear et al. (2010), the findings may indicate the beginning of a clinically significant rise in mental health difficulties, particularly PTSD. As this difference is not clinically significant at present, there is arguably not a need to be implementing clinical interventions in addition to those currently available. However, it may be beneficial for individuals and commanders to be aware of current symptom reporting patterns in order to be aware of reduced performance amongst themselves or other unit personnel which may be indicative of underlying mental health problems and an indication of continued, new or worsening, symptoms of mental health difficulties.

In order to facilitate symptom recognition, it may be beneficial to include an additional psychoeducation session for personnel after homecoming to help recognise possible symptoms of mental health problems. It could be argued that as personnel are likely to be fatigued and keen to return home during the current mental health brief at decompression, information may be better retained once back in their regular environment. It is also possible that individuals did recognise mental health difficulties

during homecoming and categorised them as part of the transition they were undertaking. To revisit potential symptoms in the months post deployment may help highlight that if symptoms have continued and are impacting functioning, then support is available.

A peer delivered program may prove useful as an addition to mental health awareness education as a peer may be a more accepted confidante than a mental health professional, for whom the individual may not have shared experience. TRiM has been well researched as a mechanism for post-traumatic event peer group led mental health assessment and support (Greenberg et al., 2010; Frappell-Cooke et al., 2010) therefore a variation of this may be effective for post-deployment mental health awareness. This could be implemented initially as peer group 'case studies' of those who have previously identified mental health symptoms and sought help for them. A follow up mental health briefing, as discussed above may benefit from such a representative being in attendance to talk about their own experience of mental health difficulties and overcoming them by consulting an appropriate avenue of support. Iversen et al. (2010) highlighted that educating non-medical support providers, such as Padres, about common symptoms of poor mental health and appropriate referral routes would help to increase the support options for personnel experiencing mental health difficulties.

4.7.2 Decreasing stigma towards help seeking

As stigma beliefs were reported at all levels, regardless of rank, interventions may be most effective from a variety of perspectives. The previously outlined peer delivered campaign to normalise stress responses, inform about previous treatment success and provide information on support available after homecoming, in addition to

the homecoming brief received at decompression, may help to convey the anti-stigma message.

Peer delivered programs may also help decrease stigma by utilising the link between high unit cohesion, satisfaction with leadership and lower rates of poor mental health and transition difficulties. Involvement of family members in education around symptom recognition and available treatments and or therapy has proven effective in a randomised controlled trial within the US military (Adler et al., 2009). This was also trialled in a UK population (Mulligan et al., 2012) which did not report significant reductions in stigma post intervention. The authors proposed that the US and UK samples received slightly different interventions and the UK personnel generally reported fewer problematic symptoms at baseline, so a significant change was harder to detect at follow up (Mulligan et al., 2012).

The association between higher stigma and symptoms of mental health difficulties may have implications for policy makers as additional anti-stigma interventions could be targeted at those scoring most highly on mental health screening measures.

As the current results showed, a proportion of those who did meet mental health caseness were reluctant to seek professional help for it. This has been shown by previous research (e.g. Iversen et al., 2010; Kehle et al., 2010) therefore additional training and information for individuals, commanders and family members may help them to be vigilant towards noticing early signs of possible psychological distress. This increase in mental health symptomatology occurred in a group who had all completed decompression, which is designed to help re-integration into a non-combat environment and to screen for possible mental health difficulties. Although we cannot be sure what

effect non-attendance at decompression would have had for this group, the results suggest that additional initiatives after homecoming may be beneficial.

4.7.3 Utilising and increasing unit cohesion and leadership satisfaction

Utilising the positive effect of unit cohesion and leadership satisfaction to reduce stigma (Wright et al., 2009) could be an effective way to approach the problem from an organisational perspective. Utilising peer delivered anti-stigma, mental health awareness campaigns may help to increase knowledge and help seeking for symptoms of possible mental ill health.

Satisfaction with leadership was shown to be the most predictive of symptoms of poor mental health at baseline in comparison to unit cohesion. This highlights another line of support that could be focussed on by unit leaders as items on the leadership satisfaction scale covered areas such as fair treatment of unit personnel, which could be addressed in leadership training to a degree. Also unit leaders could help endorse the acceptance of help seeking and conceptualise PTSD as resulting from exposure to trauma rather than individual weakness (Greene-Shortridge et al., 2007). With the anti-stigma, pro-help seeking message coming from unit commanders, individuals may feel more positively about the leadership they receive as their mental well being is being explicitly discussed.

Consultation could be undertaken as to how to increase unit cohesion and leadership satisfaction with personnel from all ranks, as commanders already undertake extensive training and units work closely together throughout training and operations. As these are potentially modifiable factors influencing mental health; the facets of what renders some dissatisfied or not cohesive is worthy of future study, as once these details are outlined, they can be emphasised in standard training and operations.

4.7.4 Involvement of support networks

The current results and previous research clearly highlight the link between symptoms of poor mental health and relationship difficulties with spouse and family. Therefore, including spouses and other family members in psychoeducation regarding the recognition of symptoms, importance of social support and providing information about local services may further help to decrease stigma around talking about mental health difficulties and accessing support.

This could include involving family members in psychoeducation programs around stigma reduction, particularly as Eaton et al. (2008) found that one fifth of partners of deployed personnel reported that seeking help for mental health problems is 'weak' and a further fifth reported it as 'embarrassing'. Spouses were reported as the group current respondents would seek support from regarding a mental health difficulty, second only to a medical officer, therefore it is important that this population are also included in an anti-stigma message as they may strongly influence whether the individual concerned chooses to seek help or not. Encouragement from family and friends was reported to be the most important factor in overcome barriers to accessing care (Warner et al., 2008) which supports the proposed strategy.

When an individual is experiencing transition or relationship difficulties, the usual methods of support may not appear available as a result of reluctance to share experiences, cognitive distortions due to symptoms of poor mental health or stigma beliefs towards accessing help. Therefore vigilance on the part of commanders and fellow personnel is also required in order to be aware of warning signs that transition difficulties may be evident.

4.7.5 Role of the DCMH staff

In addition to the provision of psychological therapy, DCMH staff such as psychologists and MHN may be able to help strengthen the anti-stigma message, recognition of mental health symptoms and increase in help seeking for such symptoms by regular consultation with military CoC to help oversee the increase in mental health awareness. Staff members could hold training sessions with unit Officers for instance to provide information and advice regarding delivering psychoeducation and recognising a variety of symptoms of CMD and PTSD.

DCMH staff could also offer supervision to leaders delivering anti-stigma, pro-help seeking campaigns to help manage and problem solve any issues that may arise.

4.7.6 Future research

As the current research showed similar findings to Fear et al. (2010) regarding an increase in probable PTSD symptoms, and an increase in symptoms of CMD and depression from baseline to follow up, subsequent research could help identify if this increase continues over time and crucially, if it reaches clinical significance. If this was the case then larger scale policy change would be indicated regarding mental health identification and treatment, which at present is not warranted.

It would be useful to measure levels of stigma in relation to seeking mental health treatment and whether they continue to decrease over time. Assessing the attitudes of spouse and family may also prove informative as the regular support networks for a large proportion of serving personnel.

Continued research into the effectiveness of peer delivered programmes would aid the development and evaluation of existing and subsequent programmes. If the

military population are reluctant to seek help from a medical professional, peer-led interventions may prove more acceptable for the majority.

4.8 Strengths

4.8.1 Design

Existing research measuring change in mental health outcomes, and the factors influencing transition after homecoming within a military cohort is limited (Sundin et al., 2010; Adler et al., 2011). The current study provides such data and does so for a largely representative group of the UKAF.

All measures used within the current study had been widely used within a military population in previous research, confirming that the scales are well validated within this population.

The number of troops being deployed to Afghanistan will increase as the conflict continues, therefore rates of mental illness may continue to rise as a reflection of the increase in tours completed. Individuals may be subject to additional stress through organisational restructures; for instance the Army is downsizing by approximately 7000 personnel and by approximately 5000 personnel each for the RN and RAF, as well as cuts to the defence budget (to be implemented by 2015) (Forbes et al., 2011). Therefore continued research and interventions are needed within this population to measure mental health change over time and assess the effectiveness of existing interventions in order to highlight where modifications may be necessary.

4.8.2 Sample

Between group analyses revealed that there were no statistically significant differences between both the two follow up groups. There were slightly differing

demographic characteristics of the current sample when compared to the UKAF as a whole, for example, a greater percentage of RAF personnel responded to the current study than would be expected given the UKAF as a whole. However rates of symptomatology and stigma were expressed irrespective of rank within the current sample, therefore it could be argued that the relatively lower number of junior personnel within the current sample highlights that possible mental health difficulties and stigma are problems experienced within the military as a whole. This suggests that conclusions can be drawn from the follow up sample.

4.9 Limitations

4.9.1 Response rate

Just over half of those consenting to follow up completed the follow up survey; this is slightly lower than the response rate achieved by Fear et al. (2010); Wilson et al. (2009); and Dandeker et al. (2010). The non-responder analysis showed that a higher proportion of those who responded to follow up were of higher ranks, over 24, female, in a relationship, had a longer length of service, were individual augmentees and reserve personnel than the UKAF as a whole. It is possible that these differences reflected responses regarding the impact of childhood adversity on mental health for instance. However, in the main, as patterns of increasing symptomatology, high stigma and a reluctance to seek help were shown in the current sample, it suggests that issues highlighted are prevalent across the military as a whole and not just limited to more junior ranks and younger personnel (as previous research has shown). Thereby interventions at addressing the aforementioned issues would be beneficial to the military as a whole, not just junior ranks for instance.

4.9.1.1 Reasons for low response rate

4.9.1.1.1 Practical factors

One explanation is the difficulty in conducting baseline research remotely. Another team were responsible for collection of the baseline data set, it is highly likely that they were under their own pressures to complete their existing workload. For instance, at decompression, personnel attend for a relatively short period of time, so there are large numbers of personnel to organise logistically.

The study team regularly liaised with the decompression staff regarding progress of data collection and it was decided to extend the data collection period over summer 2011 to help increase responding rates. With the extension of the data collection period came a new team at decompression responsible for data collection, during which time rates of responding increased.

4.9.1.1.2 Methodological factors

Due to individuals needing to have explicitly consented to follow up, there was a set pool from which to contact would be respondents. Therefore by nature of the design, only those who consented at baseline could be contacted.

4.9.1.1.3 Occupational factors

Given the nature of military roles, a limitation with following up a cohort over an eight month period since deployment is that a proportion of personnel will have been re-deployed, or moved locations rendering them unavailable for follow up participation.

4.9.1.2 Improving future response rates

Younger personnel were underrepresented within the current research, future research conducted at decompression may benefit from greater liaising with the staff

before the study starts to ensure that all personnel were approached and the confidentiality of the process highlighted. If a greater proportion over under 24 year olds are recruited at baseline, this would allow additional strategies to be employed to follow these personnel up. For instance, site visits conducted earlier after personnel return home, so redeployment is less likely to be a factor to exclude personnel from follow up.

4.9.2 Design

It has been argued that the cross sectional design (used within the current study) is not as powerful as the longitudinal design (Hoge et al., 2004). This is due to cross sectional designs capturing data at one time point for an individual, whereas longitudinal follows individuals and can track their change specifically over time.

It was decided that in the design of the current study, the cross sectional follow up design would be most suitable due to practical barriers to following up individuals at more than one follow up time point, for instance, redeployment, post operational leave and non-consent. In order to maximise possible responses, it was deemed that cross sectional follow up of a group was most suitable to ensure that follow up groups were not statistically demographically different.

4.9.3 Sample

Although the sample was representative of the UKAF as a whole, the research only included those who had completed their tour and thereby were exiting theatre via decompression. The sample did not therefore include those who had been injured or removed prematurely from theatre; Hoge, et al. (2004) highlighted the same limitation to their research. This does pose the question as to how to include such a population within research such as this and would require different sampling techniques in order to

recruit such personnel. In order to complete research to generate a reflection of the current functioning of working, non-injured UKAF personnel, the current design is indeed appropriate. To include non-working personnel would be to address a different set of hypotheses, beyond the scope of the current research; this does not however mean this is a population to overlook with regards to transition research, but adjustments to methodology would be required as to how best to include such personnel.

4.10 Conclusions

In conclusion, the current research has shown that self reported symptoms of poor mental health increased from baseline to follow up. The rise in PTSD symptoms was statistically significant and was associated with increased functional impairment at follow up. This strengthens the research previously undertaken and highlights a similar finding to Fear et al. (2010).

Endorsement of stigma beliefs was associated with reporting symptoms of poor mental health, which suggests that those experiencing troubling symptoms may be those least likely to seek help for them due to stigmatising beliefs about accessing mental health care. Stigma was reported irrespective of rank within the current study and although general levels of stigma in the military have fallen over recent years, there is still a significant link between endorsement of stigma beliefs and symptoms of poor mental health.

High levels of unit cohesion and leadership satisfaction were associated with better mental health. Transition and relationship difficulties at follow up were predicted by symptoms of poor mental health at baseline. These findings support the social support literature and suggest an area which can be developed with regards to increased cohesion and involvement of family members to help raise awareness about recognising

the symptoms of mental ill health, reduce stigmatising beliefs regarding such symptoms and to increase help seeking for them.

A variety of recommendations were made regarding increasing symptom recognition through increased education, reducing stigma beliefs through greater use of treatment ‘success stories’ and involvement of wider systems such as organisational leaders and family members to help support individuals through the transition from combat to home environment.

Recommendations for future research were suggested, to monitor if the rise in symptoms of poor mental health continues as indicated in the current study and if so, to address in a timely fashion.

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6 Appendices

LIST OF TABLES

6.1 Appendix A: Literature review

Table 6.1: UK research

Study	Sample	Measures	Main outcomes	Limitations
Fear et al. (2010). What are the consequences of deployment to Iraq and Afghanistan on the mental health of UK armed forces? A cohort study. *The Lancet*	9990 UK Armed forces personnel; 8278 regular, 1712 reserve	Sociodemographics, service history, life since leaving the service (if applicable), most recent deployment experiences, mental and physical health – 36 Item Short Form Health Survey (Ware & Sherbourne, 1992), GHQ-12, PCL-C, AUDIT.	PTSD prevalence 4% Common mental disorders (CMD) 19.7% Alcohol misuse 13% Deployment significantly associated with alcohol misuse for regulars (OR 1.22) and PTSD for reservists (OR 2.83)	Prevalence of PTSD likely overestimated using self report rather than clinical interviews.
Iversen et al. (2008). Risk factors for post traumatic stress disorder for UK armed forces personnel. *Psychological Medicine*	4762 regular UK army personnel	PCL-17, childhood experiences scale (Iversen et al., 2007), unit cohesion	Post Traumatic Stress symptoms associated with: - Lower rank, unmarried, low educational attainment, childhood adversity. - Traumatising event exposure, notably deployment to a 'forward' area and close contact with enemy. - Perceived threat to own life and completing a role perceived to be above own ability levels. - Low unit morale and low social support and not receiving a psycho-educational homecoming brief.	Cross sectional data, therefore cannot determine direction of causation for non-static factors of social support, morale.
Iversen et al. (2009). The prevalence of common mental disorders and PTSD in the UK military: using data from clinical interview-based study. *BMC Psychiatry*	4722 regular and reserve personnel deployed on TELIC 1 (war-fighting phase in Iraq); and 5550 personnel not deployed on TELIC 1.	GHQ-12; PCL-17, PHQ-9 and Primary Care PTSD (PC-PTSD)	Weighted prevalence of CMDs were 27.2% and of PTSD were 4.8%. Most common diagnoses were alcohol abuse (18%) and neurotic disorders (13.5%). No increased risk of deployment for regular personnel, reserves showed increased PTSD risk after deployment to Iraq. Prevalence rates were similar between US and UK	Functional impairment not specifically measured in outcomes.

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			personnel for PTSD, depression and subjective poor health.	
Harvey et al. (2011). Coming home: social functioning and the mental health of UK Reservists on return from deployment to Iraq or Afghanistan. *Annals of epidemiology*.	4991 UK military personnel who had deployed to Iraq or Afghanistan	GHQ-12, PCL-17, AUDIT	Reservists more likely to feel unsupported by military and report difficult social functioning. PTSD and alcohol misuse related to perceived lack of support from military. Low non-military social support related to increased CMD, probable PTSD and alcohol misuse.	Data measured at single time point, therefore no measure of potential change over time.
Rona et al. (2007). Mental health consequences of overstretch in the UK armed forces: first phase of a cohort study. *BMJ*	5547 regular UK army personnel	GHQ-12, PCL-17, AUDIT	Deployment for 13 months or more in previous 3 years more likely to meet criteria for PTSD (OR 1.55) and meet caseness on GHQ (OR 1.35). Significant association between duration of deployment and severe alcohol problems. Duration, rather than number, of deployments showed significant association with mental disorders.	PTSD symptoms not able to be linked to specific traumatic exposure as no independent information on combat exposure gained.
Jones et al. (2012). Leadership, cohesion, morale and the mental health of UK armed forces in Afghanistan. *Psychiatry*.	1431 UK AF personnel	GHQ-12, PCL-17, cohesion and leadership scales (used in Fear et al., 2010 and Hotopf et al., 2006).	17.1 reported caseness of CMD, 2.7% met criteria for probable PTSD. Higher unit morale, cohesion and perceived good leadership associated with less common mental disorder and PTSD.	Self report data, not as accurate as clinical interview e.g. symptoms may be inflated, or reduced due to confidentiality and stigma concerns
Sundin et al. (2010). Mental health among commando, airborne and other UK infantry personnel. *Occupational Medicine*.	275 Royal Marine Commandos (RMC); 202 paratroopers (PARAs); and 572 other army infantry (INF).	GHQ-12, PCL-17, cohesion and leadership scales (as above).	RMCs reported lower mental health problems and PTSD symptoms than INF, differences not explained by cohesion. The authors proposed RMCs and PARAs have greater levels of preparedness which buffers deployment experience.	Cross sectional research taken from one time point, therefore cannot determine direction of causation for associations
Browne et al. (2007).	Described in Hotopf 2006	GHQ-12, PCL-17, Chalder	Reservists reported higher	Cross-sectional study so

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Explanations for the increase in mental health symptoms on UK reserve forces who have served in Iraq. *British Journal of Psychiatry*.		Fatigue Scale (Chalder et al., 1993), SF36, cohesion and leadership	traumatic experience exposure, lower unit cohesion, lower martial satisfaction and greater transition problems. All health outcomes bar PTSD were related to role, experience of traumatic events or unit cohesion on deployment.	cannot determine direction of causation e.g. low mood impacting on measures of comradeship and relationships, or the reverse
Du Preez et al. (2012). Unit cohesion and mental health in the UK armed forces. *Occupational Medicine*.	4901 male UKAF personnel	PCL-17, GHQ-2, cohesion scale as above.	Less probable PTSD (OR .42); and CMD (OR .68) related to perceived interest from seniors. Feeling well informed related to less mental disorder in regular troops (OR .74); comradeship related to more alcohol misuse (OR 1.98). Unit cohesion generally predictive of less probable PTSD (OR .69) and CMD (OR .80)	Self report data therefore indicates probable outcomes, not actual diagnosis.
Rona et al. (2007). Women in novel occupational roles: mental health trends in the UK armed forces. *International Journal of Epidemiology*.	17650 personnel; 7695 represented Operation TELIC; 10003 represented Era (those not deployed to Iraq)	GHQ-12, SF36, PCL-C, Post Traumatic Stress Reaction (PTSR), Chalder fatigue scale	Increase in psychological symptoms in those not deployed, higher in women than men (OR PTSR 5.82; OR alcohol misuse 6.20). Psychological distress and chronic fatigue more common in women, alcohol misuse more common in men.	Potential difference in responding due to different wording in questionnaires and different time delays for those deployed to Gulf versus Iraq war.
Wilson et al. (2009). Is Previous Psychological Health Associated With the Likelihood of Iraq War Deployment? An Investigation of the "Healthy Warrior Effect". *American Journal of Epidemiology*.	2820 personnel who completed a questionnaire in 2002 were contacted between 2004-2006; 1885 responded to this follow up.	GHQ-12, PCI-17	GHQ-12 baseline caseness associated with less risk of deployment at follow up. PCL intrusiveness and avoidance at baseline reduced risk of deployment at follow up. Conclusions that those with better mental health had greater chances of redeployment.	Low number of deployed personnel in area other than Iraq, therefore decreased power to compare locations.
Frappell-Cooke et al. (2010). Does trauma risk management reduce psychological distress in	180 pre-deployment, 105 during deployment and 137 post-deployment	GHQ-12, PCL-C	Personnel from units who had previously experienced TRiM reported less psychological	Sampling was based on availability, therefore not random.

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deployed troops? *Occupational Medicine*.	questionnaire responses.		distress than units new to TRiM. Post deployment distress scores were lower than pre and during; less psychological distress was reported by those with more access to social support during deployment.	No measures of how long personnel had been in current unit – therefore may have affected perceived cohesion
Iversen et al. (2010). Help seeking and receipt of treatment among UK service personnel. *BJP*.	Described in Hotopf 2006	PHQ, PC-PTSD	23% reporting CMDs and still in the military were receiving medical help. Non-medical support, such as chaplains were more widely used. Few personnel who were receiving medical help were receiving CBT, with most receiving medication or counselling; most were seen in primary care (79%). This reflected the general population.	Self report measures do not distinguish functional impairment, therefore identifying those who may and may not be in need of treatment.
Jones et al. (2008). Do medical services personnel who deployed to the Iraq war have worse mental health than other deployed personnel? *European Journal of Public Health*.	5824 UK service personnel; 479 of which had a medical role	GHQ-12, PCL-C, Chalder Fatigue Scale and AUDIT.	Medics reported more psychological distress (OR 1.30), PTSD and alcohol misuse not associated with medical role. Medics reported lower group cohesion, more traumatic experiences, lower preparedness and more problematic post-deployment experiences. Medics made greater use of medical services than other groups.	Cross sectional study, therefore cannot determine direction of causation.
Rona et al. (2009). The contribution of prior psychological symptoms and combat exposure to post Iraq deployment mental health in the UK military. *Journal of Traumatic Stress*.	2820 personnel who completed a questionnaire in 2002 were reassessed from 2004-2006; 67% responded (n=2376).	GHQ-12, PCI-17	Combat exposure and group cohesion effected mental health outcomes independent of prior mental health; the authors concluded pre-deployment screening was therefore ineffective.	Possible recall bias, however being longitudinal, adjustments could be made for pre-deployment mental health
Greenberg et al. (2008). Getting a peace of the action: measures of post traumatic stress in UK military peacekeepers. *Journal*	1198 personnel deployed on peacekeeping operations from 1991-2000.	GHQ-12, PCL-M and 'Post traumatic stress reaction' (a brief comparison measure)	Prevalence of PTSD ranged from 3.6-5.5%. Less cases amongst married personnel and officers. Gender age and	Results may be subject to recall bias as participants were recalling events from 10

of the Royal Society of Medicine.			deployment status did not affect prevalence of PTSD. PTSD rates were lower than other nations; the authors proposed this was due to cultural and operational practice differences.	years prior in some instances. Self report used therefore may overestimate PTSD symptoms.
Gould et al. (2007). Trauma and the military: Evaluation of a PTSD psychoeducational programme. *Journal of Traumatic Stress.*	124 armed forces personnel	Attitudes to Stress and PTSD Schedule (developed by Royal Navy); Help 6 item Seeking Stigma Questionnaire (Hoge et al., 2004); GHQ-28 (Goldberg and Hillier, 1979).	TRiM training significantly improved attitudes towards PTSD, help seeking and stress from TRiM trained peers. There was not a significant effect for seeking help from other military support networks; the authors conclude TRiM shows promise in reducing stigmatising beliefs and increasing help seeking behaviour.	Self selecting sample therefore potential bias, e.g. those more interested in mental health took part in the TRiM training. Longer term follow up would help determine if effects were maintained over time (one month follow up in this study).

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Table 6.2: US research

Study	Sample	Measures	Main outcomes	Limitations
Wilk et al. (2009). Relationship of combat experiences to alcohol misuse among U.S. soldiers returning from the Iraq war. *Drug and Alcohol dependence*	1120 US soldiers from combat infantry teams, surveyed 3-4 months after return from Iraq	2 item alcohol screen, combat experiences scale, PCL-C, PHQ-9, 2 item unit cohesion scale	25% positive screen for alcohol misuse; 12% alcohol related behavioural problems. Threat of death/injury related to alcohol misuse; exposure to atrocities predicted alcohol misuse with related behavioural problems.	Cross sectional self report data, therefore cannot measure change over time and potential underreporting or overinflating symptoms
Polusny et al. (2010). Prospective risk factors for new-onset post-traumatic stress disorder in National Guard soldiers deployed to Iraq. *Psychological Medicine.*	552 Army National Guard troops deployed from March 2006 to July 2007 in Iraq	PTSD checklist (military) (PCL-M)	3.7% reported probable PTSD at baseline. At follow up 13.8% reported new onset probable PTSD, this was most significantly predicted by combat exposure (OR 2.19). Post deployment stressful life events associated with new onset probable PTSD (OR 1.96); post deployment social support was significant protective factor against probable PTSD (OR.31).	Self report measures used therefore potential reporting bias e.g. PTSD symptoms may be reflection of general anxiety also, not just in relation to traumatic event. Reports of combat exposure not cross-validated with military records.
MacGregor et al. (2012). Effect of dwell time on the mental health of US military personnel with multiple combat tours. *American Journal of Public Health.*	US marine corps personnel who deployed to Operation Iraqi Freedom (OIF) once (49,328 personnel); or twice (16,376 personnel)	Medical records were used to gather International Classification of Diseases, Ninth revision, Clinical Modification (ICD-9-CM) codes for PTSD or other mental health disorders	Two deployments were associated with higher PTSD than one ($p<0.001$). Longer time in between deployment in relation to first tour length (dwell time) was associated with less PTSD (OR .47).	Use of medical records limits sample to those who have reported such symptoms, therefore affected by potential reluctance to report symptoms in this sample.
Bray et al. (2010). Substance use and mental health trends among US military active duty personnel: key findings from the 2008 DoD Health Behaviour Survey (HRBS). *Military Medicine.*	Data used from the 28,546 US military survey responses gathered in 2008, compared with previous HRBS surveys conducted over 28 years.	Alcohol, drug and cigarette intake. Patient Health Questionnaire, 3 item version-A Burnham Depression screen, PCL-C, history of suicidal ideation or intent in previous 12 months.	Tobacco and illicit drug use reduced; rates of PTSD, alcohol misuse, prescription drug misuse, stress and suicide attempts had increased	Subject attrition over follow up potentially limits generalisability of data. Self report data therefore potential bias in responses.
Sayer et al. (2009). A Qualitative study of determinants of PTSD treatment initiation in veterans.	44 US military veterans	In depth interviews with veterans with previous disability claim submitted to US Department of Veteran Affairs.	Participants identified individual barriers to accessing PTSD treatment, the socio-cultural environment, and health care	Limited sample size (n=44). Participants were those actively seeking a claim, therefore may differ

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Psychiatry.			and disability systems. Another barrier was lack of PTSD knowledge at individual and societal levels.	in help seeking or reporting characteristics than non-claimants
Kehle et al. (2010). Early mental health treatment-seeking among US national guard soldiers deployed to Iraq. *Journal of Traumatic Stress.*	424 National Guard soldiers	PCL-17; Beck Depression Inventory (BDI-II); Deployment Risk and resilience Inventory (DRRI) measured combat experiences and perceived threat and post-deployment social support (King et al., 2003); Attitudes Towards Seeking Professional Psychological Help (ATSPPH) (Fischer & Turner, 1970), perceived stigma (Britt, 2000).	Over half who screened positive for mental health problems were not receiving treatment; those who had screened positive for mental health problems were more likely to be receiving treatment than those who had not.	Cross sectional data from one time point gathered, therefore effects of treatment or help seeking post homecoming not measured. Self report measures open to bias in reporting.
Kang et al. (2009). Health of US veterans of 1991 Gulf War: a follow-up survey in 10 years. *Journal of Occupational and Environmental Medicine.*	Follow up survey from 30,000 veterans (15,000 Gulf war and 15,000 Gulf Era veterans)	PCL-C, PHQ-9, SF-12	Gulf veterans reported higher levels of adverse mental health outcomes; they reported higher rates of mental disorders including PTSD and greater functional impairment.	Self report data therefore potential bias – however 93% of cases were verified with objective medical records therefore bias unlikely.
Peterson et al. (2010) Documented combat-related mental health problems in military noncombatants. *Journal of Traumatic Stress.*	US Ari Force members deployed to Iraq (n=4408) or Qatar (n=959)	PC-PTSD, PHQ-2, suicidal thoughts, interpersonal conflict, trauma exposure	Noncombatants deployed to Iraq reported higher exposure to traumatic events and perceived threat to life and were 6 times more likely to report PTSD symptoms than noncombatants in Qatar. Therefore a non-combat role does not protect from trauma exposure and indicates need to screen all for mental ill health post deployment.	Study population limited to only Air force personnel, who also complete shorter tours than other military branches. Responses taken at initial return, no follow up included. Self report can produce both false positives and false negatives in measures.
Felker et al. (2008). Characteristics of deployed Operation Iraqi Freedom military personnel who seek mental health care. *Military Medicine.*	296 OIF service members presenting to US military hospital Kuwait for a 3 month period in 2005.	Four item Primary Care Post Traumatic Stress Disorder Checklist (PCL-PC), those scoring 2 or more completed the PCL-M; PHQ-9; AUDIT; Life Status Questionnaire (LSQ)	35% screened positive for major depressive disorder, 19% for PTSD symptoms and 11% for severe alcohol misuse. Significant distress and functional impairment was reported by 58% of the study sample, with women representing a high percentage	As data gathered from one site, results may not be generalisable to other settings, however similar demographics and diagnoses shown in other bases in Iraq.

			of those presenting for care (27%).	

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6.2 Appendix B: Baseline information sheet consent form and questionnaire

Confidential When Complete

DECOMPRESSION QUESTIONNAIRE

INSTRUCTIONS **Study Number** [ ]

Date of Completion:.....

The purpose of this questionnaire is to evaluate the decompression process.

Decompression is a period of time, usually spent in Cyprus, which is intended to help people to unwind and prepare to return home from operations.

This questionnaire asks about your experience of decompression and also your health and wellbeing. ALL your answers will be treated in the strictest confidence and the results of this survey may help to improve the decompression process. All the answers you provide will be looked at together with those of others and we will NEVER name any individual no matter what answer they provide and no matter how senior the person who wants to know is.

Answering the questions

To answer a question, select the response that you want and mark the box, like this:

Is this your first decompression?

Yes ☐ No ■ If you make a mistake, correct it by putting a cross through your mistake and selecting another box Yes ■ No ☒

CONSENT: To improve the decompression process, we would very much like to contact you later to complete a short follow up survey and also to access your personal/medical records unless you tell us not to. We will ONLY use your email address/telephone number to contact you about the follow up questionnaire. Allowing us to follow you up will help to improve the decompression experience for other military personnel. We will NEVER use your information for non-research purposes and no one outside the research team will EVER be told about your answers.

I do not want to be contacted at a later date ☐

PLEASE SIGN YOUR NAME IF YOU AGREE TO FOLLOW UP:.....**DATE:**.....

Contact Email Address..... Contact Telephone Number.....

Preferred Contact Time Morning (0900-1300) ☐ Afternoon (1300-1700) ☐ Evening (1700-2100) ☐

First Name:..... Surname:..... Date of birth:.....

Service number:..... Your Unit or Capbadge:.....

Rank:.....

Unit contact address (to include Sub-Unit details) .....

.....

.....

PRIZE DRAW: We appreciate you taking the time to complete this questionnaire. As a thank you for completing this questionnaire and consenting to complete a follow up questionnaire, we are offering you the opportunity to take part in a prize draw. There is chance of winning one of fifteen 2GB iPod Shuffles.

I DO NOT want my name to be entered into the prize draw ☐

To protect your identity, this page will be removed and stored separately to the rest of the questionnaire

START OF QUESTIONNAIRE

PERSONAL DETAILS **Study Number**

What is your current rank or equivalent?

Navy		Army		RAF		RM	
AB	☐	Pte	☐	AC/LAC/JT	☐	Mne	☐
LH	☐	LCpl to Cpl	☐	Cpl	☐	LCpl to Cpl	☐
PO to WO1	☐	Sgt to WO1	☐	Sgt to WO	☐	Sgt to WO1	☐
Mid to Lt Cdr	☐	2nd Lt to Maj	☐	Plt Offr to Sqn Ldr	☐	2nd Lt to Maj	☐
Cdr & above	☐	Lt Col & above	☐	Wg Cdr & Above	☐	Lt Col & above	☐

Are you: Male ☐ Female ☐

Are you:
- Married or in a Civil Partnership ☐
- Living with a Partner ☐
- In a long term relationship ☐
- Single or not in a long term relationship ☐
- Separated or Divorced (and not in a long term relationship) ☐
- Widowed ☐

Do you have Children under the age of 18: Yes ☐ No ☐

Your Age:
- Less than 20 years ☐
- 20-24 years ☐
- 25-29 years ☐
- 30-34 years ☐
- 35-39 years ☐
- 40-44 years ☐
- 45+ years ☐

Service Length: How long have you been in the military for?
- Less than 1 year ☐
- 2-4 years ☐
- 5-12 years ☐
- 13-22 years ☐
- 22+ years ☐

Are you ? Regular Forces ☐ Mobilised Reserve Forces ☐

Did you deploy with your main unit?
- Yes ☐
- No, but I deployed with more than 15 members of my main unit ☐
- No, I deployed alone or with less than 15 members of my main unit ☐

How many operational tours of more than 30 days duration have you undertaken in the last five years? (*NOT INCLUDING THE CURRENT TOUR*)

	0	1	2	3	4	5	6
Iraq Tours	☐	☐	☐	☐	☐	☐	☐
Afghanistan Tours	☐	☐	☐	☐	☐	☐	☐
Other Tours	☐	☐	☐	☐	☐	☐	☐

During THIS DEPLOYMENT, how many FULL weeks have you been in theatre?

0-4 weeks	☐
5-8 weeks	☐
9-16 weeks	☐
17-26 weeks	☐
27+ weeks	☐

How many FULL months have you spent on operational deployment in the last 3 years?

0-4 months	☐
5-8 months	☐
9-12 months	☐
13-16 months	☐
17-20 months	☐
21-24 months	☐
25-36 months	☐

During THIS DEPLOYMENT, where were you located?

Mostly Check Points	☐
Mostly Patrol Bases	☐
Mostly Forward Operating Bases	☐
Mostly Main Bases	☐

What was your main role in theatre?

Have you experienced any of the following during THIS DEPLOYMENT?	**Never**	**Once**	**2-4 Times**	**5-9 Times**	**10+ Times**
Received small arms fire	☐	☐	☐	☐	☐
Encountered enemy sniper fire	☐	☐	☐	☐	☐
Seen dead or seriously injured friendly forces personnel	☐	☐	☐	☐	☐
Received incoming artillery, rocket, or mortar fire	☐	☐	☐	☐	☐
Had a mate injured or killed who was near you	☐	☐	☐	☐	☐
Had an improvised explosive device (IED) or booby trap explode near you	☐	☐	☐	☐	☐
Had a close call where a shell, rocket or missile that failed to explode landed near you	☐	☐	☐	☐	☐
Had equipment shot off your body or you were shot or hit but protective gear saved you	☐	☐	☐	☐	☐
Shot at the enemy with your personal weapon	☐	☐	☐	☐	☐
Engaged in close quarter battle with fixed bayonet	☐	☐	☐	☐	☐
Been wounded or injured	☐	☐	☐	☐	☐
Cleared/searched homes or buildings, caves or bunkers	☐	☐	☐	☐	☐
Encountered hostile or aggressive reactions from civilians	☐	☐	☐	☐	☐
Been threatened and were unable to respond because of the rules of engagement	☐	☐	☐	☐	☐
Provided aid to the wounded	☐	☐	☐	☐	☐
Seen injured or sick women or children who you were unable to help	☐	☐	☐	☐	☐
Handled or discovered human remains	☐	☐	☐	☐	☐

During THIS DEPLOYMENT, how often did you believe that you were in serious danger of being injured or killed?

Never ☐ Once or Twice ☐ Sometimes ☐ Many Times ☐

During THIS DEPLOYMENT, how long in total were you outside your base in a hostile area?

Never ☐ Up to 1 Week ☐ 1 Week to 1 Month ☐ More Than a Month ☐

During THIS DEPLOYMENT, how frequently were you outside your base in a hostile area?

Many Times a Day ☐ Daily ☐ Weekly ☐ Monthly ☐ Never ☐

During THIS DEPLOYMENT, how frequently was your base attacked?

Many Times a Day ☐ Daily ☐ Weekly ☐ Monthly ☐ Never ☐

DECOMPRESSION SECTION

Is this your first decompression?

Yes ☐ No ☐ **If 'No', how many previous decompressions have you completed?** 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 6+☐

Before you arrived in Cyprus, did you want to participate in decompression?

Yes ☐ No ☐ No Strong Feelings Either Way ☐

Having been through decompression on this occasion, did you find it helpful?

Yes ☐ A Little ☐ No ☐

Which facilities did you find helpful?

Laundry ☐ Wii Room ☐ Internet/email access ☐ Sat Phone ☐ TV/Games area ☐

How helpful were the decompression activities listed below:

	Helpful	A Little	Unhelpful	Did Not Attend
Mental Health Brief	☐	☐	☐	☐
Coming Home Brief	☐	☐	☐	☐
Driving Brief	☐	☐	☐	☐
Social Event	☐	☐	☐	☐
Beach	☐	☐	☐	☐

Do any of the following concern you about going home:

	Continuously	Often	Rarely	Never
Thoughts of unpleasant events that happened during the tour	☐	☐	☐	☐
Settling down to normal life after the tour	☐	☐	☐	☐
Re-establishing relationships (With family, friend(s), partner)	☐	☐	☐	☐
Returning to peacetime military duties	☐	☐	☐	☐

If you were entitled it, did you take R&R during this tour? Yes ☐ No ☐ Not Entitled ☐

If you took a period of R&R at home during this tour, did you find this useful?

Yes, a Lot ☐ Yes, a Little ☐ No ☐ Not Entitled ☐

How many days in total did you spend on R&R? 4 or Less ☐ 5-8 ☐ 9-14 ☐ 15 or more ☐

Did you have a TRiM interview during this tour? Yes ☐ No ☐

Were you referred for a mental health assessment as a result of the TRiM interview? Yes ☐ No ☐

HEALTH SECTION

Please rate the current severity of any sleep problems that you may have had in the past month

Difficulty falling asleep	None ☐	Mild ☐	Moderate ☐	Severe ☐	Very Severe ☐
Difficulty staying asleep	None ☐	Mild ☐	Moderate ☐	Severe ☐	Very Severe ☐
How satisfied or dissatisfied are you with your current sleep pattern?	Very Satisfied ☐	Satisfied ☐	Neutral ☐	Dissatisfied ☐	Very Dissatisfied ☐
If you have a sleep problem, does it **INTERFERE** with your daily functioning (e.g. tiredness, work or chores, memory etc.)?	Not at all ☐	A little bit ☐	Somewhat ☐	Quite a bit ☐	Extremely ☐

These questions ask about your General Health

Within the **LAST FEW WEEKS**, how often have you:

Been able to concentrate on whatever you're doing?	Better than usual ☐	Same as usual ☐	Worse than usual ☐	Much worse than usual ☐
Lost much sleep over worry?	Not at all ☐	No more than usual ☐	Rather more than usual ☐	Much more than usual ☐
Felt that you were playing a useful part in things?	More so than usual ☐	Same as usual ☐	Less useful than usual ☐	Much less than usual ☐
Felt capable of making decisions about things?	More so than usual ☐	Same as usual ☐	Less useful than usual ☐	Much less capable ☐
Felt constantly under strain?	Not at all ☐	No more than usual ☐	Rather more than usual ☐	Much more than usual ☐
Felt that you couldn't overcome your difficulties?	Not at all ☐	No more than usual ☐	Rather more than usual ☐	Much more than usual ☐
Been able to enjoy your normal day to day activities?	More so than usual ☐	Same as usual ☐	Less so than usual ☐	Much less than usual ☐
Been able to face up to your problems?	Not at all ☐	Same as usual ☐	Less able than usual ☐	Much less able ☐
Been feeling unhappy or depressed?	Not at all ☐	No more than usual ☐	Rather more than usual ☐	Much more than usual ☐
Been losing confidence in yourself?	Not at all ☐	No more than usual ☐	Rather more than usual ☐	Much more than usual ☐
Been thinking of yourself as a worthless person?	Not at all ☐	No more than usual ☐	Rather more than usual ☐	Much more than usual ☐
Been feeling reasonably happy all things considered?	More so than usual ☐	About the same as usual ☐	Less so than usual ☐	Much less than usual ☐

STRESSFUL EVENTS - Here is a list of problems and complaints that people sometimes have in relation to having experienced dangerous, stressful or horrific traumatic experiences. How much have you been bothered by these problems in the PAST MONTH?

Repeated, disturbing memories, thoughts or images of a stressful experience?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Repeated, disturbing dreams of a stressful experience?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Suddenly acting or feeling as if a stressful experience were happening again (as if you were re-living it)?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Feeling very upset when something reminded you of a stressful experience?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Having physical reactions (e.g. heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Avoiding thinking about or talking about a stressful experience?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Avoiding activities or situations because they reminded you of a stressful experience?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Trouble remembering important parts of a stressful experience?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Loss of interest in activities that you used to enjoy?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Feeling distant or cut off from other people?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Feeling emotionally numb or being unable to have loving feelings to those who are close to you?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Feeling as if your future will somehow be cut short?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Having trouble falling or staying asleep?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Feeling irritable or having angry outbursts?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Having difficulty concentrating?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Being super alert, watchful or on-guard?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐
Feeling jumpy or easily startled?	Not at all ☐	A little bit ☐	Moderately ☐	Quite a bit ☐	Extremely ☐

If you experienced any of the problems listed in this above, how DIFFICULT have these problems made it for you to do your work, take care of things or get along with other people?

Not applicable*	Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐	☐

*I did not experience any of the above problems

During the past four weeks, have you been bothered by feeling worried, tense, or anxious most of the time?

Yes ☐ No ☐

Are you frequently tense, irritable and having trouble sleeping?

Yes ☐ No ☐

Over the past two weeks, how often have you been bothered by the following problems?

	Not at all	Several Days	More than Half the Days	Nearly Every Day
Little Interest or pleasure in doing things	☐	☐	☐	☐
	Not at all	A little bit	Moderately	Quite a bit
Feeling down, depressed or hopeless	☐	☐	☐	☐

I would not seek help for a mental health problem because:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
It would be too embarrassing	☐	☐	☐	☐	☐
It would harm my career	☐	☐	☐	☐	☐
My commanders would treat me differently	☐	☐	☐	☐	☐
I would be seen as weak	☐	☐	☐	☐	☐
I don't know where to get help	☐	☐	☐	☐	☐
There would be difficulty getting time off work	☐	☐	☐	☐	☐
My visit would not remain confidential	☐	☐	☐	☐	☐

What did you think about decompression and can it be improved in any way?

Thank you. When you have completed all pages of the questionnaire, hand it in to a member of the decompression directing staff who will secure it in a safe place.

6.3 Appendix C: Follow up information sheet and consent forms

PARTICIPANT INFORMATION SHEET

Factors Influencing Psychological Adjustment following a Tour of Duty

MoDREC reference number: 204/GEN/11
PNM RESC reference number: PNM/10/11-64

We would like to invite you to participate in this research project being undertaken by Surgeon Commander Neil Greenberg of the Academic Centre for Defence Mental Health, King's College London and Lizzy Banwell of the Institute of Psychiatry, King's College London. You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. If you would like to take part, please let us know if you have been involved in any other study during the last year.

Why are we carrying out this study?
The purpose of this study is to find out about the psychological health of troops at the end of a tour of duty and over a course of six months following homecoming. This information will be used to ensure that the Armed Services can properly support personnel on return home and will help to identify who made need more support. The study shall also contribute towards a Doctorate in Clinical Psychology qualification for Lizzy Banwell.

What we can assure you is that *none* of the information you provide will be communicated back to the military in any way that you will be identified. You have our full assurance that we take confidentiality very seriously indeed.

To take part, you will be asked to complete one 15-20 minute questionnaire **either** in the first three months following homecoming, or three-to-six months following homecoming.

Only the research team will have access to the personal information you provide. Questionnaires will be stored anonymously, and all information will be stored securely. We may share completely anonymised datasets with other research institutions. However, we will never release data which contains any information that would identify you. We will not pass your contact details to any third parties. The overall findings of the study will be published, but individual responses will be entirely confidential. Records will be held for 20 years and you have the right of access to your records at any time. You are free to withdraw from the study at any time during completion of the questionnaire. Once you have completed the questionnaire, you can withdraw your data from the study any time up to the 30th November 2011 using the contact details of either Professor Greenberg or Lizzy Banwell (given at the end of this sheet). If you ever require any further explanation, please do not hesitate to ask.

Although we think it is unlikely, in the event of you suffering any adverse effects as a consequence of your participation in this study, Service personnel will be eligible to apply for compensation under the MoD's 'No Fault Compensation Scheme'.

As a 'thank you' for taking part in both stages of the study, you will be entered in to a prize draw to win one of 15 2G iPod Shuffles. Entry in to this draw is entirely voluntary.

The study protocol has been reviewed by two ethics committees: the **PNM RESC** (reference number: **PNM/10/11-64**), and the Ministry of Defense Research Ethics Committee (MoDREC) (reference number: **204/GEN/11**).

An independent medical officer will be available throughout the study. His sole function is to act independently of the study team to ensure your safety and well-being. He may advise the termination your participation in the research on medical grounds at any time, and you may consult with him at any time.

Name and contact details of Independent Medical Officer:

Lt. Col. Peter McAllister
Consultant Advisor in Psychiatry (Army)
Queen Elizabeth Memorial Health Centre
Tidworth
Hampshire, SP9 7SH
Mil: 94342 2236
Fax: 94342 2345

If this study has harmed you in any way, you may contact the Principal Investigator (contact details below).

APPENDICES

Name and contact details of Principal Investigator:
Surgeon Commander Neil Greenberg
Academic Centre for Defence Mental Health
Weston Education Centre - KCL
Cutcombe Road,
London SE5 9RJ
0207 848 5351
acdmh@kcl.ac.uk

Name and contact details for those with general queries about the study:

Lizzy Banwell
Trainee Clinical Psychologist
3rd Floor Addiction Sciences Building
4 Windsor Walk
Institute of Psychiatry
Denmark Hill
London
SE5 8AF

APPENDICES

CONSENT FORM FOR PARTICIPANTS IN RESEARCH STUDIES

Title of Study: Factors influencing psychological adjustment following a Tour of Duty

MoDREC reference number: 204/GEN/11
PNM RESC reference number: PNM/10/11-64

- **The nature, aims and risks of the research have been explained to me. I have read and understood the Participant Information Sheet and understand what is expected of me. All my questions have been answered fully to my satisfaction.**

- **I understand that if I decide at any time during the research that I no longer wish to participate in this project, I can notify the researchers involved and be withdrawn from it immediately without having to give a reason. I also understand that I may be withdrawn from it at any time, and that in neither case will this be held against me in subsequent dealings with the Ministry of Defence.**

- **I consent to the processing of my personal information for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998.**

- **I agree to volunteer as a participant for the study described in the information sheet and give full consent.**

- **This consent is specific to the particular study described in the Participant Information Sheet attached and shall not be taken to imply my consent to participate in any subsequent study or deviation from that detailed here.**

- **I understand that in the event of my sustaining injury, illness or death as a direct result of participating as a volunteer in Ministry of Defence research, I or my dependants may enter a claim with the Ministry of Defence for compensation under the provisions of the no-fault compensation scheme, details of which are attached.**

Participant's Statement:

I _____

agree that the research project named above has been explained to me to my satisfaction and I agree to take part in the study. I have read both the notes written above and the Participant Information Sheet about the project, and understand what the research study involves.

Signed Date

Investigator's Statement:

I _____

confirm that I have carefully explained the nature, demands and any foreseeable risks (where applicable) of the proposed research to the Participant.

Signed Date

APPENDICES

AUTHORISING SIGNATURES

The information supplied above is to the best of my knowledge and belief accurate. I clearly understand my obligations and the rights of research participants, particularly concerning recruitment of participants and obtaining valid consent.

Signature of Principal Investigator

…… **Date**

Name and contact details of Independent Medical Officer (if appropriate):
Lt. Col. Peter McAllister
Consultant Advisor in Psychiatry (Army)
Queen Elizabeth Memorial Health Centre
Tidworth
Hampshire, SP9 7SH
Mil: 94342 2236
Fax: 94342 2345

Name and contact details of Principal Investigator:
Surgeon Commander Neil Greenberg
Academic Centre for Defence Mental Health
Weston Education Centre - KCL
Cutcombe Road,
London SE5 9RJ
020 7848 5351
acdmh@kcl.ac.uk

6.4 Appendix D: Follow up questionnaire

ACDMH
ACADEMIC CENTRE FOR DEFENCE MENTAL HEALTH

KCMHR
KING'S CENTRE FOR MILITARY HEALTH RESEARCH

KING'S College LONDON

Herrick 13 Decompression Follow Up

This questionnaire is for the research project being undertaken by Surgeon Commander Neil Greenberg of the Academic Centre for Defence Mental Health, King's College London and Lizzy Banwell of the Institute of Psychiatry, King's College London. It asks some questions about your health and wellbeing.

ALL your answers will be treated in the strictest confidence and the results of this survey will help the UK Armed Forces take better care of deployed personnel, however the armed forces are not directly involved in this research. All the answers you provide will be looked at together with those of others and we will NEVER name any individual no matter what answer they provide and no matter how senior the person who wants to know is.

Personal Details

1. Date of Completion:

Your date of birth and service number shall only be used to enable us to check who has completed the questionnaire (so people don't get sent the questionnaire more than once) and we can match your first questionnaire responses (completed at Decompression) and current questionnaire responses.

2. Date of Birth:

3. First Name:

4. Surname:

5. Service Number:

PRIZE DRAW
We appreciate you taking the time to complete this questionnaire. As a thank you for completing this questionnaire, we are offering the opportunity to take part in a prize draw. There are 15 chances of winning a 2G iPod Shuffle.

Please **select 'yes' below** if you would like to be entered in the draw.

6. I want to be entered into the prize draw: Yes / No

Deployment Experience

7. During your **MOST RECENT** deployment, how frequently did you go outside your main base into a hostile area?

- ☐ Daily
- ☐ Several times a week
- ☐ Weekly
- ☐ Monthly
- ☐ Never

8. During your **MOST RECENT** deployment, how often did you think that you were in **SERIOUS** danger of being injured or killed?
Please select ONE option

☐ Never ☐ Sometimes

☐ Once or twice ☐ Many times

Health and Wellbeing

9. Since returning home from your most recent operation, have you had any of the following?

	Yes	No
Physical ill health	☐	☐
Stress/emotional problems	☐	☐
Alcohol problems	☐	☐
Relationship/family problems	☐	☐

10. If you answered **YES** to any item in **Question 9**, did you seek help for these problems?

☐ Yes ☐ No

11. If you sought help for these problems, who did you go to?
Please select ALL those you went to for EACH problem

	Tick
Medical Officer/ GP	☐
Mental health professional	☐
Chain of command	☐
TRiM practitioner	☐
Other non-medical professional (e.g. padre, welfare officer)	☐
Military friend(s)	☐
Spouse / partner	☐
Civilian friend(s)	☐
Family member	☐

12. Are you **CURRENTLY** experiencing a stress or emotional problem?

☐ Yes ☐ No

13. If you answered **YES** to **Question 12**, would you be interested in receiving help for the problem(s)?
Please not that whatever your answer, we will <u>NOT</u> be making contact with you

☐ Yes ☐ No

14. Here is a list of concerns that you might have when considering seeking help for: stress/emotion problems; relationship/family problems; or alcohol problems. Please rate each of the possible concerns that might affect **YOUR** decision to receive help for ANY of these problems.
Please select ONE option for each statement

	Strongly Disagree	Disagree	Agree	Strongly Agre
I don't know where to get help	☐	☐	☐	☐
People with mental illness should not be given any responsibility	☐	☐	☐	☐
I would have difficulty getting time away from duty for an appointment	☐	☐	☐	☐
It would be too embarrassing	☐	☐	☐	☐
It would harm my career	☐	☐	☐	☐
Members of my unit might have less confidence in me	☐	☐	☐	☐
My unit leaders might treat me differently	☐	☐	☐	☐
I would be seen as weak (by those who are important to me)	☐	☐	☐	☐
I don't trust mental health professionals	☐	☐	☐	☐
My visit would not remain confidential	☐	☐	☐	☐
I would think less of a team member if I knew they were receiving mental health treatment	☐	☐	☐	☐
My leaders discourage the use of mental health services	☐	☐	☐	☐
I have had previous bad experiences with mental health professionals	☐	☐	☐	☐

Your Family and Relationships

We are interested to know if you think that your most recent deployment has had an effect on your relationship with your partner and/or children

Please only answer the next **TWO** questions if you are **CURRENTLY** in a relationship

15. Since you returned home from your **most recent** operation, do you think your relationship with your spouse/partner changed?

- ☐ It's better now
- ☐ It's worse now
- ☐ It's stayed the same
- ☐ Not applicable

16. How happy are you with your marriage/relationship?

- ☐ Extremely happy
- ☐ Happy
- ☐ Neither happy or unhappy
- ☐ Unhappy
- ☐ Extremely unhappy
- ☐ Not applicable

Please only answer the next **TWO** questions if you **have children**

17. Do you think that your most recent deployment has had an effect on your children?

- ☐ No effect
- ☐ A little positive effect
- ☐ A large positive effect
- ☐ A little negative effect
- ☐ A large negative effect
- ☐ Not applicable

18. Since you returned home from your **most recent** operation, have you had any difficulty re-establishing your relationship with your children?

- ☐ No difficulty
- ☐ A little difficulty
- ☐ A lot of difficulty
- ☐ Not applicable

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Your Family Background

People come to the military from a variety of different backgrounds. We are interested to see if and how experiences before you joined the Armed Forces affect your health and wellbeing.

19. When I was growing up:
Please select ONE option for each statement

	True	False
I came from a close family	☐	☐
I used to get shouted at a lot at home	☐	☐
I often used to play truant from school	☐	☐
I felt valued by my family	☐	☐
I regularly used to see or hear physical fighting or verbal abuse between my parents	☐	☐
In my family there was at least one member I could talk to about things that were important to me	☐	☐
I used to be hit/hurt by a parent or caregiver regularly	☐	☐
One (or more) of my parents had problems with alcohol or drugs	☐	☐
My family used to do enjoyable things together	☐	☐
I spent some time (any time) in Local Authority Care/Social Services Care	☐	☐
I had one or more special teacher(s)/youth worker(s)/family friend(s) who looked out for me	☐	☐
I often used to get into physical fights at school	☐	☐
There was at least one thing/activity that I did that made me feel special or proud	☐	☐
I was suspended/expelled from school (ever)	☐	☐
I had problems with reading or writing at school and needed extra help	☐	☐
I did things that should have got me (or did get me) into trouble with the police	☐	☐

Transition

To what extent do you agree or disagree with the following statements about returning from your most recent operation?

Please select ONE option for each statement which you think most closely applies to you

20.	Agree	Disagree
I've been well supported by the military	☐	☐
I've found it difficult to adjust to being back home	☐	☐
People haven't understood what I have been through	☐	☐
I've not wanted to talk about my operational experiences with my family/friends	☐	☐
I've found it difficult to get back to my normal social activities	☐	☐
I've had serious financial problems	☐	☐
I have argued more with my spouse/partner	☐	☐
I've been let down by people who I thought would stand by me	☐	☐
I've been involved in physical fights outside my family	☐	☐
I've been physically violent towards a family member	☐	☐
I've had other major problems since coming home from deployment	☐	☐

21. If you answered **'agree'** to the **last item of Question 18** ("I've had other major problems since coming home from deployment"), please provide details below:

Support from Unit

22. How much do you agree or disagree with the following statements?
Please select ONE answer for each statement which you think most closely applies to you.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I feel a sense of comradeship (or closeness) between myself and other people in my unit	☐	☐	☐	☐	☐
I could go to most people in my unit if I had a personal problem	☐	☐	☐	☐	☐
My seniors are interested in what I do or think	☐	☐	☐	☐	☐
I feel well informed about what is going on in my unit	☐	☐	☐	☐	☐

23. Since returning home from your tour of duty, how often have your superiors
Please tick ONE option for each statement which you think most closely applies to you

	Never	Rarely	Sometimes	Often	Always
Embarrassed juniors in front of other unit members	☐	☐	☐	☐	☐
Treated all members of the unit fairly	☐	☐	☐	☐	☐
Showed concern about the safety of unit members	☐	☐	☐	☐	☐
Accepted extra duties or tasks for the unit in order to impress their superiors	☐	☐	☐	☐	☐

Health

Here is a list of problems and complaints that people sometimes have in relation to stressful experiences. How much have you been bothered by these problems in the **PAST MONTH**?
Please select ONE answer for each statement which you think most closely applies to you

24.	Not at all	A little bit	Moderately	Quite a bit	Extremely
Repeated, disturbing memories, thoughts or images of a stressful experience?	☐	☐	☐	☐	☐
Repeated, disturbing dreams of a stressful experience?	☐	☐	☐	☐	☐
Suddenly acting or feeling as if a stressful experience were happening again (as if you were re-living it)?	☐	☐	☐	☐	☐
Feeling very upset when something reminded you of a stressful experience?	☐	☐	☐	☐	☐
Having physical reactions (e.g. heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience?	☐	☐	☐	☐	☐
Avoiding thinking about or talking about a stressful experience?	☐	☐	☐	☐	☐
Avoiding activities or situations because they reminded you of a stressful experience?	☐	☐	☐	☐	☐
Trouble remembering important parts of a stressful experience?	☐	☐	☐	☐	☐
Loss of interest in activities that you used to enjoy?	☐	☐	☐	☐	☐
Feeling distant or cut off from other people?	☐	☐	☐	☐	☐
Feeling emotionally numb or being unable to have loving feelings to those who are close to you?	☐	☐	☐	☐	☐
Feeling as if your future will somehow be cut short?	☐	☐	☐	☐	☐
Having trouble falling or staying asleep?	☐	☐	☐	☐	☐
Feeling irritable or having angry outbursts?	☐	☐	☐	☐	☐
Having difficulty concentrating?	☐	☐	☐	☐	☐
Being super alert, watchful or on-guard?	☐	☐	☐	☐	☐
Feeling jumpy or easily startled?	☐	☐	☐	☐	☐

25. How difficult have the problems and complaints in **Question 24** made it for you to do your work, take care of things, or get along with other people?
Please select ONE option

- ☐ Not difficult at all
- ☐ Somewhat difficult
- ☐ Very difficult
- ☐ Extremely difficult
- ☐ Not applicable, I did not experience any of the problems in Question 24

26. Here are some general questions about your health. Within the **LAST FOUR WEEKS**, have you:
Please select ONE answer for each statement which you think most closely applies to you

	More than usual	Same as usual	Less than usual	Much less than usual
Been able to concentrate on whatever you're doing?	☐	☐	☐	☐
Lost much sleep over worry?	☐	☐	☐	☐
Felt that you are playing a useful part in things?	☐	☐	☐	☐
Felt capable of making decisions about things?	☐	☐	☐	☐
Felt constantly under strain?	☐	☐	☐	☐
Felt you couldn't overcome your difficulties?	☐	☐	☐	☐
Been able to enjoy your normal day-to-day activities?	☐	☐	☐	☐
Been able to face up to your problems?	☐	☐	☐	☐
Been feeling unhappy and depressed?	☐	☐	☐	☐
Been losing confidence in yourself?	☐	☐	☐	☐
Been thinking of yourself as a worthless person?	☐	☐	☐	☐
Been feeling reasonably happy, all things considered?	☐	☐	☐	☐

27. How difficult have the areas covered in **Question 26** made it for you to do your work, take care of things, or get along with other people?
Please select ONE option

- ☐ Not difficult at all
- ☐ Somewhat difficult
- ☐ Very difficult
- ☐ Extremely difficult
- ☐ Not applicable, I did not experience any of the problems in Question 24

28. Over the **LAST 4 WEEKS**, how often have you been bothered by any of the following problems?
Please select ONE answer for each statement which you think most closely applies to you

	Not at all	Several days	More than half the days	Nearly every day
Feeling nervous, anxious, on edge, or worrying about a lot of different things	☐	☐	☐	☐
Not being able to stop or control worrying	☐	☐	☐	☐
Worrying too much about different things	☐	☐	☐	☐
Trouble relaxing	☐	☐	☐	☐
Being so restless it is hard to sit still	☐	☐	☐	☐
Being afraid as if something awful might happen	☐	☐	☐	☐
Becoming easily annoyed or irritable	☐	☐	☐	☐

29. How difficult have the questions in **Question 28** made it for you to do your work, take care of things, or get along with other people?
Please select ONE option

☐ Not difficult at all

☐ Somewhat difficult

☐ Very difficult

☐ Extremely difficult

☐ Not applicable, I did not experience any of the problems in Question 28

Sleep

30. How satisfied/dissatisfied are you with your current sleep pattern?
Please select ONE option

- ☐ Very satisfied
- ☐ Satisfied
- ☐ Neutral
- ☐ Dissatisfied
- ☐ Very dissatisfied

31. To what extent do you consider your sleep problem to INTERFERE with your daily functioning (e.g. daytime fatigue, ability to function at work/daily chores, concentration, memory, mood, etc.)?
Please select ONE option

- ☐ Not at all/no sleep problem
- ☐ A little
- ☐ Somewhat
- ☐ Much
- ☐ Very much

Alcohol

32. How often do you have a drink containing alcohol?
Please select ONE option

- ☐ Never
- ☐ Monthly or less
- ☐ 2-4 times a month
- ☐ 2 times a week
- ☐ 3 times a week
- ☐ 4 or more times a week

33. How many UNITS of alcohol do you have on a typical day when you are drinking? **A pint of standard beer / lager = 2 units. A single measure of spirit / small glass of wine = 1 unit. A pint / can of strong beer / lager = 3 units. A bottle of alcopop (e.g. Smirnoff Ice) = 1.5 units**
Please select ONE option

- ☐ 1 or 2
- ☐ 3 or 4
- ☐ 5 or 6
- ☐ 7 to 9
- ☐ 10 to 14
- ☐ 15 to 19
- ☐ 20 to 29
- ☐ 30 or more

34. How often do you have six or more units on one occasion?
Please select ONE option

- ☐ Never
- ☐ Less than monthly
- ☐ Monthly
- ☐ Weekly
- ☐ Daily/almost daily

35. How often do you have twelve or more units on one occasion?
Please select ONE option

- ☐ Never
- ☐ Less than monthly
- ☐ Monthly
- ☐ Weekly
- ☐ Daily/almost daily

36. How often during the **PAST YEAR** have you found that you were not able to stop drinking once you had started?
Please select ONE option

- ☐ Never
- ☐ Less than monthly
- ☐ Monthly
- ☐ Weekly
- ☐ Daily/almost daily

37. How often during the **PAST YEAR** have you failed to do what was normally expected of you because of drinking?
Please select ONE option

- ☐ Never
- ☐ Less than monthly
- ☐ Monthly
- ☐ Weekly
- ☐ Daily/almost daily

38. How often during the **PAST YEAR** have you needed a first drink in the morning to get yourself going after a drinking session?
Please select ONE option

- ☐ Never
- ☐ Less than monthly
- ☐ Monthly
- ☐ Weekly
- ☐ Daily/almost daily

39. How often during the **PAST YEAR** have you had a feeling of guilt or remorse after drinking?
Please select ONE option

- ☐ Never
- ☐ Less than monthly
- ☐ Monthly
- ☐ Weekly
- ☐ Daily/almost daily

40. How often during the **PAST YEAR** have you been unable to remember what happened the night before because you had been drinking?
Please select ONE option

- ☐ Never
- ☐ Less than monthly
- ☐ Monthly
- ☐ Weekly
- ☐ Daily/almost daily

41. Have you or has someone else been injured as a result of your drinking?
Please select ONE option

- ☐ No
- ☐ Yes, but not in the last year
- ☐ Yes, during the past year

42. Has a relative / friend / health worker been concerned about your drinking/suggested you cut down?
Please select ONE option

- ☐ No
- ☐ Yes, but not in the last year
- ☐ Yes, during the past year

Health (continued)

Over the **LAST 2 WEEKS**, how often have you been bothered by any of the following problems?
Please select ONE answer for each statement which you think most closely applies to you

43.	Not at all	Several days	More than half the days	Nearly every day
Little interest or pleasure in doing things	☐	☐	☐	☐
Feeling down, depressed, or hopeless	☐	☐	☐	☐
Trouble falling or staying asleep, or sleeping too much	☐	☐	☐	☐
Feeling tired or having little energy	☐	☐	☐	☐
Poor appetite or overeating	☐	☐	☐	☐
Feeling bad about yourself — or that you are a failure or have let yourself or your family down	☐	☐	☐	☐
Trouble concentrating on things, such as reading the newspaper or watching television	☐	☐	☐	☐
Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	☐	☐	☐	☐
Thoughts that you would be better off dead or of hurting yourself in some way	☐	☐	☐	☐

Thank you very much for taking the time to complete this questionnaire, your responses are greatly appreciated.

6.5 Appendix E Pilot information sheet and consent form

PARTICIPANT INFORMATION SHEET – PILOT STUDY

Factors Influencing Psychological Adjustment following a Tour of Duty

MoDREC reference number: 204/GEN/11
PNM RESC reference number: PNM/10/11-64

We would like to invite you to participate in this research project being undertaken by Surgeon Commander Neil Greenberg of the Academic Centre for Defence Mental Health, King's College London and Lizzy Banwell of the Institute of Psychiatry, King's College London. You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. If you would like to take part, please let us know if you have been involved in any other study during the last year.

Why are we carrying out this study?
The purpose of this study is to find out about the psychological health of troops at the end of a tour of duty and over a course of six months following homecoming. This information will be used to ensure that the Armed Services can properly support personnel on return home and will help to identify who made need more support. The study shall also contribute towards a Doctorate in Clinical Psychology qualification for Lizzy Banwell.

What we can assure you is that *none* of the information you provide will be communicated back to the military in any way that you will be identified. You have our full assurance that we take confidentiality very seriously indeed.

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As part of the design of this research, a 'pilot' phase is being completed. This process is to ensure that the questionnaire is as clear as possible and your feedback on this would be very much appreciated. To take part, you will be asked to complete one 10-15 minute questionnaire and provide comments or suggestions if you think it could be improved in any way e.g. the language made easier to understand.

Only the research team will have access to the personal information you provide. Questionnaires will be stored anonymously, and all information will be stored securely. We may share completely anonymised datasets with other research institutions. However, we will never release data which contains any information that would identify you. We will not pass your contact details to any third parties. The overall findings of the study will be published, but individual responses will be entirely confidential. Records will be held for 20 years and you have the right of access to your records at any time. You are free to withdraw from the study at any time during completion of the questionnaire. Once you have completed the questionnaire, you can withdraw your data from the study any time up to the 30th November 2011 using the contact details of either Professor Greenberg or Lizzy Banwell (given at the end of this sheet). If you ever require any further explanation, please do not hesitate to ask.

Although we think it is unlikely, in the event of you suffering any adverse effects as a consequence of your participation in this study, Service personnel will be eligible to apply for compensation under the MoD's 'No Fault Compensation Scheme'. Full details of this scheme are given at the end of this Information Sheet.

The study protocol has been reviewed by two ethics committees: the **Psychiatry Nursing and Midwifery Research Ethics Sub-Committee** (reference number: **PNM/10/11-64**), and the Ministry of Defense Research Ethics Committee (MoDREC) (reference number: **204/GEN/11**).

An independent medical officer will be available throughout the study. His sole function is to act independently of the study team to ensure your safety and well-being. He may advise the termination your participation in the research on medical grounds at any time, and you may consult with him at any time.

Name and contact details of Independent Medical Officer:
Lt. Col. Peter McAllister
Consultant Advisor in Psychiatry (Army)
Queen Elizabeth Memorial Health Centre
Tidworth
Hampshire, SP9 7SH
Mil: 94342 2236
Fax: 94342 2345

If this study has harmed you in any way, you may contact the Principal Investigator.

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Name and contact details of Principal Investigator:
Surgeon Commander Neil Greenberg
Academic Centre for Defence Mental Health
Weston Education Centre - KCL
Cutcombe Road,
London SE5 9RJ
0207 848 5351
acdmh@kcl.ac.uk

Name and contact details for those with general queries about the study:

Lizzy Banwell
Trainee Clinical Psychologist
3rd Floor Addiction Sciences Building
4 Windsor Walk
Institute of Psychiatry
Denmark Hill
London
SE5 8AF

ARRANGEMENTS FOR THE PAYMENT OF NO-FAULT COMPENSATION TO RESEARCH PARTICIPANTS

1. This Annex sets out the arrangements for the payment of no-fault compensation to a person who suffers illness and/or personal injury as a direct result of participating in research conducted on behalf of the Ministry of Defence. The no-fault compensation arrangements only apply to research participants (Military, Civilian, or non-Ministry of Defence) who take part in a Trial that has been approved by the MOD Research Ethics Committee.
2. A research participant wishing to seek no-fault compensation under these arrangements should contact the DBR Common Law Claims & Policy (CLCP), Ministry of Defence, Level 1, Spine 3, Zone J, Whitehall, London, SW1A 2HB who may need to ask the Claimant to be seen by a MOD medical adviser.
3. CLCP will consider reasonable requests for reimbursement of legal or other expenses incurred by research participants in relation to pursuing their claim (e.g. private medical advice, clinical tests, legal advice on the level of compensation offered) provided that they have been notified of the Claimant's intention to make such a Claim.
4. If an injury is sufficiently serious to warrant an internal MOD inquiry, any settlement may be delayed at the request of the research participant until the outcome is known and made available to the participant in order to inform his or her decision about whether to accept no-fault compensation or proceed with a common law claim. An interim payment pending any inquiry outcome may be made in cases of special need. It is the Claimant's responsibility to do all that he or she can to mitigate his or her loss.

5. In order to claim compensation under these no-fault arrangements, a research participant must have sustained an illness and/or personal injury as a direct result of participation in a Trial. A claim must be submitted within three years of when the incident giving rise to the claim occurred, or, if symptoms develop at a later stage, within three years of such symptoms being medically documented.
6. The fact that a research participant has been formally warned of possible injurious effects of the trial upon which a claim is subsequently based does not remove MOD's responsibility for payment of no-fault compensation. The level of compensation offered shall be determined by taking account of the level of compensation that a court would have awarded for the same injury, illness or death had it resulted from the Department's negligence.
7. In assessing the level of compensation, CLCP, in line with common law principles, will take into account the degree to which the Claimant may have been responsible for his or her injury or illness and a deduction may be made for contributory negligence accordingly.
8. In the event of CLCP and the injured party being unable to reach a mutually acceptable decision about compensation, the claim will be presented for arbitration to a nominated Queen's Counsel. CLCP will undertake to accept the outcome of any such arbitration. This does not affect in any way the rights of the injured party to withdraw from the negotiation and pursue his or her case as a common law claim through the Courts.

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CONSENT FORM FOR PARTICIPANTS IN RESEARCH STUDIES

Title of Study: Factors influencing psychological adjustment following a Tour of Duty

Ministry of Defence Research Ethics Committee Reference: 204/GEN/11
Psychiatry Nursing and Midwifery Research Ethics Sub-Committee reference number: PNM/10/11-64

- **The nature, aims and risks of the research have been explained to me. I have read and understood the Participant Information Sheet and understand what is expected of me. All my questions have been answered fully to my satisfaction.**

- **I understand that if I decide at any time during the research that I no longer wish to participate in this project, I can notify the researchers involved and be withdrawn from it immediately without having to give a reason. I also understand that I may be withdrawn from it at any time, and that in neither case will this be held against me in subsequent dealings with the Ministry of Defence.**

- **I consent to the processing of my personal information for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998.**

- **I agree to volunteer as a participant for the study described in the information sheet and give full consent.**

- **This consent is specific to the particular study described in the Participant Information Sheet attached and shall not be taken to imply my consent to participate in any subsequent study or deviation from that detailed here.**

- **I understand that in the event of my sustaining injury, illness or death as a direct result of participating as a volunteer in Ministry of Defence research, I or my dependants may enter a claim with the Ministry of Defence for compensation under the provisions of the no-fault compensation scheme, details of which are attached.**

Participant's Statement:

I _____

agree that the research project named above has been explained to me to my satisfaction and I agree to take part in the study. I have read both the notes written above and the Participant Information Sheet about the project, and understand what the research study involves.

Signed Date

Investigator's Statement:

I _____

confirm that I have carefully explained the nature, demands and any foreseeable risks (where applicable) of the proposed research to the Participant.

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Signed Date

AUTHORISING SIGNATURES

The information supplied above is to the best of my knowledge and belief accurate. I clearly understand my obligations and the rights of research participants, particularly concerning recruitment of participants and obtaining valid consent.

Signature of Principal Investigator

…… Date

Name and contact details of Independent Medical Officer (if appropriate):
Lt. Col. Peter McAllister
Consultant Advisor in Psychiatry (Army)
Queen Elizabeth Memorial Health Centre
Tidworth
Hampshire, SP9 7SH
Mil: 94342 2236
Fax: 94342 2345

Name and contact details of Principal Investigator:
Surgeon Commander Neil Greenberg
Academic Centre for Defence Mental Health
Weston Education Centre - KCL
Cutcombe Road,
London SE5 9RJ
020 7848 5351
acdmh@kcl.ac.uk

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Appendix E: Recruitment email

Subject line: Herrick 13 Decompression Follow up Study

Dear Sir/Madam,

As you recently returned from Decompression at Bloodhound Camp in Cyprus, you completed a questionnaire in which you agreed to be contacted to complete a follow up questionnaire.

You are likely to be busy during POL, but I would really appreciate you taking the time to fill in the questionnaire.

- The results from the study will be useful for planning ways to best support service personnel returning from operational tour
- You can be entered in to a prize draw for the chance of winning an iPod Shuffle
- This study is run independently from the Mod (although your answers will be useful for the MoD for service planning)
- You will not be identified from the answers you give

If you do wish to complete the questionnaire, it should take no more than 10 minutes of your time.

Please follow the link below if you wish to complete this questionnaire, your answers will be very much appreciated:

http://survey.iop.kcl.ac.uk/TakeSurvey.aspx?EID=981Bl7lB038B126B419B426BM3I

Thank you very much for your time.

Yours sincerely,

Lizzy Banwell
Trainee Clinical Psychologist
Addiction Sciences Building
4 Windsor Walk
Institute of Psychiatry
Denmark Hill
SE5 8AF

6.6 Appendix G: Results

6.6.1 Non-responder analysis

6.6.1.1 Rank

Table 1 Rank non-responder frequencies

			Tri-Service Rank					
			Junior Rank	Junior NCO	Senior NCO	Junior Officer	Senior Officer	Total
Respond to FU	.00	Count	38	61	84	81	30	294
		% within Respond to FU	12.9%	20.7%	28.6%	27.6%	10.2%	100.0%
		% within Tri-Service Rank	5.5%	7.7%	14.6%	18.7%	46.2%	11.5%
		% of Total	1.5%	2.4%	3.3%	3.2%	1.2%	11.5%
	1.00	Count	659	733	492	352	35	2271
		% within Respond to FU	29.0%	32.3%	21.7%	15.5%	1.5%	100.0%
		% within Tri-Service Rank	94.5%	92.3%	85.4%	81.3%	53.8%	88.5%
		% of Total	25.7%	28.6%	19.2%	13.7%	1.4%	88.5%
Total		Count	697	794	576	433	65	2565
		% within Respond to FU	27.2%	31.0%	22.5%	16.9%	2.5%	100.0%
		% within Tri-Service Rank	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	27.2%	31.0%	22.5%	16.9%	2.5%	100.0%

Table 2 Chi Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	140.995[a]	4	.000
Likelihood Ratio	115.725	4	.000
Linear-by-Linear Association	109.860	1	.000
N of Valid Cases	2565		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.45.

Table 3 Chi Square Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.234	.000
	Cramer's V	.234	.000
N of Valid Cases		2565	

6.6.1.2 Gender

Table 4 Gender non-responder frequencies

			Sex		
			Male	Female	Total
Respond to FU	.00	Count	253	38	291
		% within Respond to FU	86.9%	13.1%	100.0%
		% within Sex	11.4%	17.0%	11.9%
		% of Total	10.3%	1.6%	11.9%
	1.00	Count	1975	185	2160
		% within Respond to FU	91.4%	8.6%	100.0%
		% within Sex	88.6%	83.0%	88.1%
		% of Total	80.6%	7.5%	88.1%
Total		Count	2228	223	2451
		% within Respond to FU	90.9%	9.1%	100.0%
		% within Sex	100.0%	100.0%	100.0%
		% of Total	90.9%	9.1%	100.0%

Table 5 Chi Square Test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.261[a]	1	.012		
Continuity Correction[b]	5.730	1	.017		
Likelihood Ratio	5.681	1	.017		
Fisher's Exact Test				.017	.011
Linear-by-Linear Association	6.259	1	.012		
N of Valid Cases	2451				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 26.48.
b. Computed only for a 2x2 table

Table 6 Chi Square Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.051	.012
	Cramer's V	.051	.012
N of Valid Cases		2451	

6.6.1.3 Relationship status

Table 7 Non-responder frequencies

			Relationship Recoded		
			Not in a Relationship	In a Relationship	Total
Respond to FU	.00	Count	50	245	295

		% within Respond to FU	16.9%	83.1%	100.0%
		% within Relationship Recoded	7.3%	13.0%	11.5%
		% of Total	2.0%	9.6%	11.5%
	1.00	Count	631	1635	2266
		% within Respond to FU	27.8%	72.2%	100.0%
		% within Relationship Recoded	92.7%	87.0%	88.5%
		% of Total	24.6%	63.8%	88.5%
Total		Count	681	1880	2561
		% within Respond to FU	26.6%	73.4%	100.0%
		% within Relationship Recoded	100.0%	100.0%	100.0%
		% of Total	26.6%	73.4%	100.0%

Table 8 Chi Square Test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	15.879[a]	1	.000		
Continuity Correction[b]	15.326	1	.000		
Likelihood Ratio	17.245	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	15.873	1	.000		
N of Valid Cases	2561				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 78.44.
b. Computed only for a 2x2 table

Table 9 Chi Square Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.079	.000
	Cramer's V	.079	.000
N of Valid Cases		2561	

6.6.1.4 Age

Table 10 Non-responder frequencies

			Age up to 24 years vs Older		
			Up to 24 Years	24 Years and Older	Total
Respond to FU	.00	Count	30	257	287
		% within Respond to FU	10.5%	89.5%	100.0%
		% within Age up to 24 years vs Older	5.2%	13.4%	11.5%
		% of Total	1.2%	10.3%	11.5%
	1.00	Count	547	1663	2210
		% within Respond to FU	24.8%	75.2%	100.0%
		% within Age up to 24 years vs Older	94.8%	86.6%	88.5%

	% of Total	21.9%	66.6%	88.5%
Total	Count	577	1920	2497
	% within Respond to FU	23.1%	76.9%	100.0%
	% within Age up to 24 years vs Older	100.0%	100.0%	100.0%
	% of Total	23.1%	76.9%	100.0%

Table 11 Chi Square Test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	29.226[a]	1	.000		
Continuity Correction[b]	28.427	1	.000		
Likelihood Ratio	34.021	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	29.215	1	.000		
N of Valid Cases	2497				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 66.32.
b. Computed only for a 2x2 table

Table 12 Chi Square Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.108	.000
	Cramer's V	.108	.000
N of Valid Cases		2497	

6.6.1.5 Service length

Table 13 Non-responder frequencies

			Service length Group					
			<1 Year	2-4	5-12	13-22	22+	Total
Respond to FU	.00	Count	0	35	97	77	53	262
		% within Respond to FU	.0%	13.4%	37.0%	29.4%	20.2%	100.0%
		% within Service length Group	.0%	7.0%	10.5%	15.3%	22.5%	12.1%
		% of Total	.0%	1.6%	4.5%	3.6%	2.4%	12.1%
	1.00	Count	5	466	826	427	183	1907
		% within Respond to FU	.3%	24.4%	43.3%	22.4%	9.6%	100.0%
		% within Service length Group	100.0%	93.0%	89.5%	84.7%	77.5%	87.9%
		% of Total	.2%	21.5%	38.1%	19.7%	8.4%	87.9%
Total		Count	5	501	923	504	236	2169
		% within Respond to FU	.2%	23.1%	42.6%	23.2%	10.9%	100.0%
		% within Service length Group	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	.2%	23.1%	42.6%	23.2%	10.9%	100.0%

Table 14 Chi Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	43.857[a]	4	.000
Likelihood Ratio	41.960	4	.000
Linear-by-Linear Association	42.459	1	.000
N of Valid Cases	2169		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .60.

Table 15 Chi Square Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.142	.000
	Cramer's V	.142	.000
N of Valid Cases		2169	

6.6.1.6 Individual augmentee versus formed unit

Table 16 Non-responder frequencies

			IA vs. FU		
			Formed Unit	Individual Augmentee	Total
Respond to FU	.00	Count	141	154	295
		% within Respond to FU	47.8%	52.2%	100.0%
		% within IA vs. FU	8.8%	16.0%	11.5%
		% of Total	5.5%	6.0%	11.5%
	1.00	Count	1457	811	2268
		% within Respond to FU	64.2%	35.8%	100.0%
		% within IA vs. FU	91.2%	84.0%	88.5%
		% of Total	56.8%	31.6%	88.5%
Total		Count	1598	965	2563
		% within Respond to FU	62.3%	37.7%	100.0%
		% within IA vs. FU	100.0%	100.0%	100.0%
		% of Total	62.3%	37.7%	100.0%

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	30.073[a]	1	.000		
Continuity Correction[b]	29.377	1	.000		
Likelihood Ratio	29.182	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	30.061	1	.000		
N of Valid Cases	2563				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 111.07.
b. Computed only for a 2x2 table

Table 17 Chi Square Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.108	.000
	Cramer's V	.108	.000
N of Valid Cases		2563	

6.6.1.7 Regular or reserve

Table 18 Non-responder frequencies

			Regular or Reserve		
			Regular	Reserve	Total
Respond to FU	.00	Count	264	29	293
		% within Respond to FU	90.1%	9.9%	100.0%
		% within Regular or Reserve	10.7%	29.6%	11.4%
		% of Total	10.3%	1.1%	11.4%
	1.00	Count	2205	69	2274
		% within Respond to FU	97.0%	3.0%	100.0%
		% within Regular or Reserve	89.3%	70.4%	88.6%
		% of Total	85.9%	2.7%	88.6%
Total		Count	2469	98	2567
		% within Respond to FU	96.2%	3.8%	100.0%
		% within Regular or Reserve	100.0%	100.0%	100.0%
		% of Total	96.2%	3.8%	100.0%

Table 19 Chi Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	33.297[a]	1	.000		
Continuity Correction[b]	31.454	1	.000		
Likelihood Ratio	24.855	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	33.284	1	.000		
N of Valid Cases	2567				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.19.
b. Computed only for a 2x2 table

Table 20 Chi Square symmetric measures

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.114	.000
	Cramer's V	.114	.000
N of Valid Cases		2567	

6.6.1.8 Children under 18

Table 21 Non-responder frequencies

			Children under 18		
			No Children Under 18	Has Children Under 18	Total
Respond to FU	.00	Count	158	134	292
		% within Respond to FU	54.1%	45.9%	100.0%
		% within Children under 18	10.6%	13.5%	11.8%
		% of Total	6.4%	5.4%	11.8%
	1.00	Count	1331	855	2186
		% within Respond to FU	60.9%	39.1%	100.0%
		% within Children under 18	89.4%	86.5%	88.2%
		% of Total	53.7%	34.5%	88.2%
Total		Count	1489	989	2478
		% within Respond to FU	60.1%	39.9%	100.0%
		% within Children under 18	100.0%	100.0%	100.0%
		% of Total	60.1%	39.9%	100.0%

Table 22 Chi Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.934[a]	1	.026		
Continuity Correction[b]	4.656	1	.031		
Likelihood Ratio	4.875	1	.027		
Fisher's Exact Test				.030	.016
Linear-by-Linear Association	4.932	1	.026		
N of Valid Cases	2478				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 116.54.
b. Computed only for a 2x2 table

Table 23 Chi square symmetric measures

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.045	.026
	Cramer's V	.045	.026
N of Valid Cases		2478	

6.6.1.9 Number of tours

Table 24 Non-responder frequencies

			0 or 1 tour vs All Others		
			0-1 Previous Tours	2 or More Previous Tours	Total
Respond to FU	.00	Count	130	163	293
		% within Respond to FU	44.4%	55.6%	100.0%
		% within 0 or 1 tour vs All Others	11.7%	11.4%	11.5%
		% of Total	5.1%	6.4%	11.5%
	1.00	Count	981	1272	2253
		% within Respond to FU	43.5%	56.5%	100.0%
		% within 0 or 1 tour vs All Others	88.3%	88.6%	88.5%
		% of Total	38.5%	50.0%	88.5%
Total		Count	1111	1435	2546
		% within Respond to FU	43.6%	56.4%	100.0%
		% within 0 or 1 tour vs All Others	100.0%	100.0%	100.0%
		% of Total	43.6%	56.4%	100.0%

Table 25 Chi Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.072[a]	1	.788		
Continuity Correction[b]	.042	1	.837		
Likelihood Ratio	.072	1	.788		
Fisher's Exact Test				.802	.418
Linear-by-Linear Association	.072	1	.788		
N of Valid Cases	2546				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 127.86.
b. Computed only for a 2x2 table

Table 26 Chi Square symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.005	.788
	Cramer's V	.005	.788
N of Valid Cases		2546	

6.6.1.10 Time in theatre

Table 27 Non-responder frequencies

			Less vs More Time in Theatre		
			0-16 Weeks in Theatre	17-27 Plus weeks in Theatre	Total
Respond to FU	.00	Count	140	155	295
		% within Respond to FU	47.5%	52.5%	100.0%
		% within Less vs More Time in Theatre	12.0%	11.3%	11.6%
		% of Total	5.5%	6.1%	11.6%

	1.00	Count	1030	1220	2250
		% within Respond to FU	45.8%	54.2%	100.0%
		% within Less vs More Time in Theatre	88.0%	88.7%	88.4%
		% of Total	40.5%	47.9%	88.4%
Total		Count	1170	1375	2545
		% within Respond to FU	46.0%	54.0%	100.0%
		% within Less vs More Time in Theatre	100.0%	100.0%	100.0%
		% of Total	46.0%	54.0%	100.0%

Table 28 Chi-square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.296[a]	1	.586		
Continuity Correction[b]	.233	1	.630		
Likelihood Ratio	.296	1	.586		
Fisher's Exact Test				.619	.315
Linear-by-Linear Association	.296	1	.586		
N of Valid Cases	2545				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 135.62.
b. Computed only for a 2x2 table

Table 29 Chi Square symmetric measures

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.011	.586
	Cramer's V	.011	.586
N of Valid Cases		2545	

6.6.1.11 Harmony guidelines

Table 30 Non-responder frequencies

			Harmony Guidelines		
			No Breach	Breach	Total
Respond to FU	.00	Count	260	28	288
		% within Respond to FU	90.3%	9.7%	100.0%
		% within Harmony Guidelines	11.7%	10.9%	11.6%
		% of Total	10.5%	1.1%	11.6%
	1.00	Count	1962	229	2191
		% within Respond to FU	89.5%	10.5%	100.0%
		% within Harmony Guidelines	88.3%	89.1%	88.4%
		% of Total	79.1%	9.2%	88.4%
Total		Count	2222	257	2479
		% within Respond to FU	89.6%	10.4%	100.0%
		% within Harmony Guidelines	100.0%	100.0%	100.0%

			Harmony Guidelines		
			No Breach	Breach	Total
Respond to FU	.00	Count	260	28	288
		% within Respond to FU	90.3%	9.7%	100.0%
		% within Harmony Guidelines	11.7%	10.9%	11.6%
		% of Total	10.5%	1.1%	11.6%
	1.00	Count	1962	229	2191
		% within Respond to FU	89.5%	10.5%	100.0%
		% within Harmony Guidelines	88.3%	89.1%	88.4%
		% of Total	79.1%	9.2%	88.4%
Total		Count	2222	257	2479
		% within Respond to FU	89.6%	10.4%	100.0%
		% within Harmony Guidelines	100.0%	100.0%	100.0%
		% of Total	89.6%	10.4%	100.0%

Table 31 Chi-square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.146[a]	1	.703		
Continuity Correction[b]	.078	1	.780		
Likelihood Ratio	.148	1	.700		
Fisher's Exact Test				.758	.398
Linear-by-Linear Association	.146	1	.703		
N of Valid Cases	2479				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 29.86.
b. Computed only for a 2x2 table

Table 32 Chi Square symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.008	.703
	Cramer's V	.008	.703
N of Valid Cases		2479	

6.6.1.12 Forward deployment versus rear

Table 33 Non-responder frequencies

			Forward Deployment vs Rear		
			Forward Deployment (CP, PB, FOB)	Rearward Deployment (MOB)	Total
Respond to FU	.00	Count	59	232	291
		% within Respond to FU	20.3%	79.7%	100.0%
		% within Forward Deployment vs Rear	10.5%	11.7%	11.4%
		% of Total	2.3%	9.1%	11.4%
	1.00	Count	504	1754	2258

	% within Respond to FU	22.3%	77.7%	100.0%
	% within Forward Deployment vs Rear	89.5%	88.3%	88.6%
	% of Total	19.8%	68.8%	88.6%
Total	Count	563	1986	2549
	% within Respond to FU	22.1%	77.9%	100.0%
	% within Forward Deployment vs Rear	100.0%	100.0%	100.0%
	% of Total	22.1%	77.9%	100.0%

Table 34 Chi Square test

df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
1	.428		
1	.474		
1	.424		
		.454	.238
1	.429		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 64.27.
b. Computed only for a 2x2 table

Table 35 Chi square symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.016	.428
	Cramer's V	.016	.428
N of Valid Cases		2549	

6.6.1.13 Sleep satisfaction

Table 36 Non-responder frequencies

			Sleep Satisfaction Recoded to a Binary		
			Satisfied	Dissatisfied	Total
Respond to FU	.00	Count	141	153	294
		% within Respond to FU	48.0%	52.0%	100.0%
		% within Sleep Satisfaction Recoded to a Binary	11.4%	11.7%	11.5%
		% of Total	5.5%	6.0%	11.5%
	1.00	Count	1100	1152	2252
		% within Respond to FU	48.8%	51.2%	100.0%
		% within Sleep Satisfaction Recoded to a Binary	88.6%	88.3%	88.5%
		% of Total	43.2%	45.2%	88.5%
Total		Count	1241	1305	2546

	% within Respond to FU	48.7%	51.3%	100.0%
	% within Sleep Satisfaction Recoded to a Binary	100.0%	100.0%	100.0%
	% of Total	48.7%	51.3%	100.0%

Table 37 Chi Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.082[a]	1	.775		
Continuity Correction[b]	.050	1	.823		
Likelihood Ratio	.082	1	.775		
Fisher's Exact Test				.804	.412
Linear-by-Linear Association	.082	1	.775		
N of Valid Cases	2546				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 143.30.
b. Computed only for a 2x2 table

Table 38 Chi square symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.006	.775
	Cramer's V	.006	.775
N of Valid Cases		2546	

6.6.1.14 Sleep impact functioning

Table 39 Non-responder frequencies

			Sleep Interferes With Daily Functioning		
			Not at all to Somewhat	Quite a Bit Extremely	Total
Respond to FU	.00	Count	252	4	256
		% within Respond to FU	98.4%	1.6%	100.0%
		% within Sleep Interferes With Daily Functioning	11.7%	5.5%	11.5%
		% of Total	11.3%	.2%	11.5%
	1.00	Count	1908	69	1977
		% within Respond to FU	96.5%	3.5%	100.0%
		% within Sleep Interferes With Daily Functioning	88.3%	94.5%	88.5%
		% of Total	85.4%	3.1%	88.5%
Total		Count	2160	73	2233
		% within Respond to FU	96.7%	3.3%	100.0%
		% within Sleep Interferes With Daily Functioning	100.0%	100.0%	100.0%
		% of Total	96.7%	3.3%	100.0%

Table 40 Chi Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.663[a]	1	.103		
Continuity Correction[b]	2.089	1	.148		
Likelihood Ratio	3.208	1	.073		
Fisher's Exact Test				.133	.065
Linear-by-Linear Association	2.662	1	.103		
N of Valid Cases	2233				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.37.
b. Computed only for a 2x2 table

Table 41 Chi square symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.035	.103
	Cramer's V	.035	.103
N of Valid Cases		2233	

6.6.1.15 GHQ-12 case versus no case

Table 42 Non-responder frequencies

			GHQ		
			0	1	Total
Respond to FU	.00	Count	260	34	294
		% within Respond to FU	88.4%	11.6%	100.0%
		% within GHQ	11.2%	15.9%	11.6%
		% of Total	10.3%	1.3%	11.6%
	1.00	Count	2057	180	2237
		% within Respond to FU	92.0%	8.0%	100.0%
		% within GHQ	88.8%	84.1%	88.4%
		% of Total	81.3%	7.1%	88.4%
Total		Count	2317	214	2531
		% within Respond to FU	91.5%	8.5%	100.0%
		% within GHQ	100.0%	100.0%	100.0%
		% of Total	91.5%	8.5%	100.0%

Table 43 Chi Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.155[a]	1	.042		
Continuity Correction[b]	3.713	1	.054		
Likelihood Ratio	3.816	1	.051		
Fisher's Exact Test				.045	.031
Linear-by-Linear Association	4.154	1	.042		
N of Valid Cases	2531				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 24.86.
b. Computed only for a 2x2 table

Table 44 Chi square symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.041	.042
	Cramer's V	.041	.042
N of Valid Cases		2531	

6.6.1.16 GAD-2 case versus no case

Table 45 Non-responder frequencies

			GAD2 Case vs. non-Case		
			Not a Case	Case	Total
Respond to FU	.00	Count	245	47	292
		% within Respond to FU	83.9%	16.1%	100.0%
		% within GAD2 Case vs. non-Case	11.4%	12.9%	11.6%
		% of Total	9.7%	1.9%	11.6%
	1.00	Count	1905	317	2222
		% within Respond to FU	85.7%	14.3%	100.0%
		% within GAD2 Case vs. non-Case	88.6%	87.1%	88.4%
		% of Total	75.8%	12.6%	88.4%
Total		Count	2150	364	2514
		% within Respond to FU	85.5%	14.5%	100.0%
		% within GAD2 Case vs. non-Case	100.0%	100.0%	100.0%
		% of Total	85.5%	14.5%	100.0%

Table 46 Chi Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.698[a]	1	.404		
Continuity Correction[b]	.558	1	.455		
Likelihood Ratio	.680	1	.410		
Fisher's Exact Test				.426	.225
Linear-by-Linear Association	.697	1	.404		
N of Valid Cases	2514				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 42.28.
b. Computed only for a 2x2 table

Table 47 Chi square symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.017	.404
	Cramer's V	.017	.404
N of Valid Cases		2514	

6.6.1.17 PHQ-2 case versus no case

Table 48 Non-responder frequencies

			PHQ Case		
			Not a Case	Case	Total
Respond to FU	.00	Count	280	11	291
		% within Respond to FU	96.2%	3.8%	100.0%
		% within PHQ	11.7%	10.8%	11.6%
		% of Total	11.2%	.4%	11.6%
	1.00	Count	2116	91	2207
		% within Respond to FU	95.9%	4.1%	100.0%
		% within PHQ	88.3%	89.2%	88.4%
		% of Total	84.7%	3.6%	88.4%
Total		Count	2396	102	2498
		% within Respond to FU	95.9%	4.1%	100.0%
		% within PHQ	100.0%	100.0%	100.0%
		% of Total	95.9%	4.1%	100.0%

Table 49 Chi Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.077[a]	1	.781		
Continuity Correction[b]	.015	1	.904		
Likelihood Ratio	.079	1	.779		
Fisher's Exact Test				.876	.467
Linear-by-Linear Association	.077	1	.781		
N of Valid Cases	2498				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.88.
b. Computed only for a 2x2 table

Table 50 Chi square symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.006	.781
	Cramer's V	.006	.781
N of Valid Cases		2498	

6.6.1.18 One or more stigma item endorsed

Table 51 Non-responder frequencies

			Stigma Case One Item or More		
			Low Stigma	High Stigma	Total
Respond to FU	.00	Count	152	138	290
		% within Respond to FU	52.4%	47.6%	100.0%
		% within Stigma Case One Item or More	10.1%	14.1%	11.7%

		% of Total	6.1%	5.6%	11.7%
	1.00	Count	1353	842	2195
		% within Respond to FU	61.6%	38.4%	100.0%
		% within Stigma Case One Item or More	89.9%	85.9%	88.3%
		% of Total	54.4%	33.9%	88.3%
Total		Count	1505	980	2485
		% within Respond to FU	60.6%	39.4%	100.0%
		% within Stigma Case One Item or More	100.0%	100.0%	100.0%
		% of Total	60.6%	39.4%	100.0%

Table 52 Chi Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	9.130[a]	1	.003		
Continuity Correction[b]	8.747	1	.003		
Likelihood Ratio	8.981	1	.003		
Fisher's Exact Test				.003	.002
Linear-by-Linear Association	9.126	1	.003		
N of Valid Cases	2485				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 114.37.
b. Computed only for a 2x2 table

Table 53 Chi square symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.061	.003
	Cramer's V	.061	.003
N of Valid Cases		2485	

6.6.1.19 PCL-C case

Table 54 Non-responder frequencies

			PCL Case Scoring 30 or More		
			Not a Case	Case	Total
Respond to FU	.00	Count	271	21	292
		% within Respond to FU	92.8%	7.2%	100.0%
		% within PCL Case Scoring 30 or More	11.5%	15.3%	11.7%
		% of Total	10.9%	.8%	11.7%
	1.00	Count	2087	116	2203
		% within Respond to FU	94.7%	5.3%	100.0%
		% within PCL Case Scoring 30 or More	88.5%	84.7%	88.3%
		% of Total	83.6%	4.6%	88.3%
Total		Count	2358	137	2495
		% within Respond to FU	94.5%	5.5%	100.0%

	% within PCL Case Scoring 30 or More	100.0%	100.0%	100.0%
	% of Total	94.5%	5.5%	100.0%

Table 55 Chi Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.843[a]	1	.175		
Continuity Correction[b]	1.491	1	.222		
Likelihood Ratio	1.709	1	.191		
Fisher's Exact Test				.172	.113
Linear-by-Linear Association	1.843	1	.175		
N of Valid Cases	2495				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 16.03.
b. Computed only for a 2x2 table

Table 56 Chi square symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.027	.175
	Cramer's V	.027	.175
N of Valid Cases		2495	

6.6.2 Data context

Table 57 Transition problems

Transition Problems (n=288)	Agreement n (%)
People haven't understood what I have been through (287)	**124 (43.2)**
I've not wanted to talk about my operational experiences with my family/friends (288)	**92 (31.9)**
I have found it difficult to adjust to being back home (287)	**81 (28.2)**
I have not been well supported by the military (287)	**71 (24.7)**
I've argued more with my spouse/partner 65 (283)	**65 (23.0)**
I've found it difficult to get back to my normal social activities (288)	**66 (22.9)**
I've been let down by people who I thought would stand by me (288)	**33 (11.5)**
I've had other major problems since coming home from deployment (286)	**17 (5.9)**
I've had serious financial problems (287)	**13 (4.5)**
I've been involved in physical fights outside the family (288)	**9 (3.1)**
I've been physically violent towards a family member (288)	**3 (1.0)**

6.6.3 Hypothesis two

6.6.3.1 Stigma and mental health at baseline

Table 58 Linear regression

Likelihood Ratio Chi-Square	df	Sig.

35.587	7	.000

Table 59 Linear regression parameter estimates

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.538	.2148	.117	.959	6.266	1	.012
PCL-C total	.054	.0314	-.008	.115	2.948	1	.086
GHQ-12 total	.003	.0702	-.135	.140	.002	1	.968
GAD-2 total	.146	.3204	-.482	.774	.208	1	.648
Sleep dissatisfaction	.329	.2177	-.098	.756	2.285	1	.131
Sleep function	.823	.5753	-.305	1.950	2.045	1	.153
PHQ-2 total	.166	.1827	-.192	.524	.827	1	.363

GAD-2 and GHQ-12 removed from regression as significance over .4 and run again.

Table 60 Linear regression parameter estimates

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.539	.2151	.117	.960	6.269	1	.012
PCL total	.059	.0291	.002	.116	4.089	1	.043
Sleep satisfaction	.335	.2159	-.088	.758	2.407	1	.121
Sleep impact function	.977	.4766	.043	1.911	4.202	1	.040
PHQ total	.186	.1744	-.155	.528	1.143	1	.285

PHQ-2 and sleep satisfaction removed as over .1 and re-run:

Table 61 Linear regression parameter estimates

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.471	.2096	.060	.882	5.045	1	.025
PCL total	.087	.0210	.046	.128	17.110	1	.000
Sleep impact function	1.101	.4464	.227	1.976	6.089	1	.014

Predictors of baseline stigma p<.05 therefore all added in logistic regression:

Table 62 Logistic regression significance

Likelihood Ratio Chi-Square	df	Sig.
27.691	3	.000

Table 63 Logistic regression parameter estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	.509	.2690	-.019	1.036	3.576	1	.059	1.663	.982	2.818
PCL total	.110	.0295	.053	.168	13.979	1	.000	1.117	1.054	1.183
Sleep impact function	21.556	.6224	20.336	22.776	1199.284	1	.000	2.299E9	6.788E8	7.787E9

Error message regarding sleep functionality variable, therefore re-run with PCL only.

Main tables in *results* section, additional tables from non-GLM logistic model below:

Table 64 non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	378.379[a]	.076	.102

Table 65 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	5.342	5	.376

Table 66 Non-GLM Classification Table

	Observed		Predicted		
			Stigma Case One Item or More		Percentage Correct
			Low Stigma	High Stigma	
Step 1	Stigma Case One Item or More	Low Stigma	120	32	78.9
		High Stigma	78	60	43.5
	Overall Percentage				62.1

Observed			Predicted		
			Stigma Case One Item or More		Percentage Correct
			Low Stigma	High Stigma	
Step 1	Stigma Case One Item or More	Low Stigma	120	32	78.9
		High Stigma	78	60	43.5
	Overall Percentage				62.1

a. The cut value is .500

6.6.3.2 Stigma at follow up predicted by baseline mental health

Table 67 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
11.934	7	.103

Table 68 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.586	.3367	-.074	1.246	3.033	1	.082
PCL total	-.016	.0460	-.106	.074	.123	1	.726
GHQ total	.054	.1031	-.148	.256	.274	1	.600
GAD total	.120	.4257	-.714	.954	.079	1	.778
PHQ total	.429	.2874	-.135	.992	2.223	1	.136
Sleep satisfaction	.410	.3689	-.313	1.133	1.236	1	.266
Sleep function	.724	1.2530	-1.732	3.180	.334	1	.564

Predictors >.4 removed:

Table 69 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
7.911	3	.048

Table 70 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.413	.3124	-.199	1.026	1.750	1	.186
PHQ total	.369	.2161	-.055	.792	2.911	1	.088
Sleep satisfaction	.352	.3263	-.287	.992	1.164	1	.281

Error warning for PHQ logistic model:

Table 71 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
3.151	2	.207

Table 72 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	.077	.2851	-.482	.636	.073	1	.787	1.080	.618	1.889
PHQ total	.298	.2414	-.175	.771	1.521	1	.217	1.347	.839	2.162

Table 73 Chi Square test

		PHQ Case		Total
		Not a Case	Case	
Stigma case	.00	62	5	67
	1.00	170	38	208
Total		232	43	275

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.486[a]	1	.034		
Continuity Correction[b]	3.704	1	.054		
Likelihood Ratio	5.117	1	.024		
Fisher's Exact Test				.034	.022
Linear-by-Linear Association	4.470	1	.034		
N of Valid Cases	275				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.48.
b. Computed only for a 2x2 table

Table 74 Chi square symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.128	.034
	Cramer's V	.128	.034
N of Valid Cases		275	

6.6.3.3 Stigma and mental health at follow up:

Table 75 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
13.765	7	.056

Table 76 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.095	.4319	-.751	.942	.049	1	.825
PCL-C total	.063	.0366	-.009	.134	2.932	1	.087
GHQ-12 total	.051	.1438	-.231	.333	.125	1	.724
GAD-7 total	-.072	.0745	-.218	.074	.942	1	.332
PHQ-9 total	.097	.0791	-.058	.252	1.497	1	.221
Sleep dissatisfaction	.251	.4665	-.664	1.165	.289	1	.591
Sleep disturbance	-.387	.8756	-2.103	1.329	.195	1	.659

Predictors with a p value over .4 were removed (group remained as covariate).

Linear regressions completed separately for Stigma and PCL, PHQ and GAD due to multicolinearity of the three independent variables.

6.6.3.3.1 Stigma and PCL at follow up

Table 77 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
19.869	2	.000

Table 78 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.277	.3042	-.319	.873	.830	1	.362
PCL total	.081	.0189	.044	.118	18.313	1	.000

There were three data points which were outliers within this model; however removal of them did not alter the significance of the overall model, PCL predictive value, and group number remained highly non-significant.

Non-GLM logistic regression run to ascertain predictive power of model:

Table 79 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	244.506[a]	.169	.254

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Table 80 Model predictive power

Observed			Predicted		
			Stigma follow up		Percentage Correct
			.00	1.00	
Step 1	Stigma follow up	.00	3	61	4.7
		1.00	1	202	99.5
	Overall Percentage				76.8

a. The cut value is .500

6.6.3.3.2 Stigma and PHQ follow up

Table 81 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
18.444	2	.000

Table 82 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.272	.3048	-.325	.869	.798	1	.372
PHQ total	.175	.0403	.096	.254	18.775	1	.000

Three data points were outliers within this model; however removal of them did not alter the significance of the overall model, PHQ predictive value, and group number remained highly non-significant.

Non-GLM logistic regression was run to ascertain predictive power of model:

Table 83 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	258.430[a]	.124	.185

Table 84 Model predictive power

Observed	Predicted		
	Stigma follow up		Percentage Correct
	.00	1.00	

Step 1	Stigma follow up	.00	0	64	.0
		1.00	0	202	100.0
	Overall Percentage				75.9

6.6.3.3.3 Stigma and GAD at follow up:

Table 85 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
8.685	2	.013

Table 86 Linear regression parameter Estimates

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.292	.3104	-.316	.900	.885	1	.347
GAD total	.129	.0434	.044	.214	8.878	1	.003

There were two outliers within this model, however transformation of the GAD variable did not increase the significance of the model or individual predictor variable.

Non-GLM logistic regression was run to ascertain predictive power of model:

Table 87 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	268.170[a]	.091	.136

a

Table 88 Model predictive power

Observed		Predicted		
		Stigma follow up		Percentage Correct
		.00	1.00	
Stigma follow up	.00	0	64	.0
	1.00	0	202	100.0

Overall Percentage			75.9

6.6.4 Hypothesis three

6.6.4.1 Follow up PCL-C predicted by baseline mental health

Table 89 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
38.855	7	.000

Table 90 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.026	1.1674	-2.262	2.314	.000	1	.982
PCL-C	.369	.2171	-.056	.795	2.894	1	.089
GHQ-12	.412	.3625	-.298	1.123	1.293	1	.256
GAD-2	-.033	1.9260	-3.808	3.742	.000	1	.986
PHQ-2	.691	.9897	-1.248	2.631	.488		.485
Sleep dissatisfaction	-.795	1.3536	-3.448	1.858	.345	1	.557
Sleep disturbance	6.662	8.2798	-9.566	22.890	.647	1	.421

Predictor variables with p values over .4 were removed.

There were outliers within the dataset, so PCL was Log transformed in order to control for the positive skew of this variable:

Table 91 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
42.333	3	.000

Table 92 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.009	.0151	-.038	.021	.326	1	.568
PCL total	.006	.0024	.001	.011	6.388	1	.011
GHQ total	.009	.0048	-4.023E-5	.019	3.809	1	.051

Non-GLM logistic run to ascertain predictive power:

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	214.764	.229	.355

Table 93 Model predictive power

Classification Table[a]					
	Observed		Predicted		
			PCLfuCase30orMore		Percentage Correct
			.00	1.00	
Step 1	PCLfuCase30orMore	.00	212	6	97.2
		1.00	38	21	35.6
	Overall Percentage				84.1

a. The cut value is .500

6.6.4.2 Follow up GHQ-12 predicted by baseline mental health

Table 94 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
16.597	7	.020

Table 95 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.151	.2523	-.645	.344	.357	1	.550
PCL-C	.034	.0310	-.027	.095	1.204	1	.272
GHQ-12	.157	.0766	.007	.307	4.208	1	.040
GAD-2	-.458	.2950	-1.036	.120	2.408	1	.121
PHQ-2	.047	.1633	-.273	.367	.084	1	.772
Sleep dissatisfaction	-.277	.2715	-.809	.255	1.041	1	.308
Sleep disturbance	2.178	1.2490	-.270	4.626	3.041	1	.081

Predictor variables with p values over 0.4 were removed from linear regression and re-run:

Table 96 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
14.138	4	.007

Table 97 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.134	.2419	-.608	.341	.305	1	.581
GHQ total	.191	.0696	.055	.328	7.540	1	.006
GAD total	-.329	.2483	-.816	.157	1.758	1	.185
Sleep impact function	2.162	1.2679	-.324	4.647	2.906	1	.088

Outliers were present within this model, however did not affect the overall model significance. Linear model with outliers removed displayed below:

Table 98 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
22.627	4	.000

Table 99 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.131	.2155	-.554	.291	.372	1	.542
GHQ total	.218	.0691	.083	.353	9.954	1	.002
GAD total	-.245	.2484	-.731	.242	.971	1	.325
Sleep impact function	2.106	1.2417	-.327	4.540	2.878	1	.090

Non-GLM logistic regression run to ascertain predictive power, however there were not sufficient cases in each category of the sleep variable:

Table 100 Categorical Variables Codings

		Frequency	Parameter coding (1)
Sleep Interferes With Daily Functioning	Not at all to Somewhat	236	1.000
	Quite a Bit Extremely	4	.000

Therefore logistic could not be used with this variable, which left only one predictor variable in the model (GHQ baseline). Fisher's exact value reported as assumptions of minimum cases not met.

Table 101 Chi Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.746[a]	1	.097		
Continuity Correction[b]	1.009	1	.315		
Likelihood Ratio	2.110	1	.146		
Fisher's Exact Test				.153	.153
Linear-by-Linear Association	2.735	1	.098		
N of Valid Cases	241				

Non-GLM logistic model for GHQ at baseline:

Table 102 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	246.799[a]	.022	.037

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 103 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.749	3	.862

Table 104 Model predictive power

Observed			Predicted		
			GHQfuCase4ormore		Percentage Correct
			.00	1.00	
Step 1	GHQfuCase4ormore	.00	232	0	100.0
		1.00	47	0	.0
	Overall Percentage				83.2

a. The cut value is .500

6.6.4.3 Follow up GAD-7 predicted by baseline mental health

Table 105 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
35.096	7	.000

Table 106 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.481	.4891	-1.439	.478	.966	1	.326
PCL-C	.031	.0836	-.133	.195	.136	1	.713
GHQ-12	.100	.1778	-.249	.448	.316	1	.574
GAD-2	.705	.8077	-.878	2.288	.762	1	.383
PHQ-2	.837	.5077	-.158	1.832	2.720	1	.099
Sleep dissatisfaction	.121	.5123	-.883	1.125	.056	1	.814
Sleep disturbance	.367	2.7492	-5.022	5.755	.018	1	.894

Table 107 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	265.282[a]	.054	.085

Table 108 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	2.043	1	.153

Table 109 Model predictive power

	Observed		Predicted		
			GAD follow up		
			.00	1.00	Percentage Correct
Step 1	GAD Follow up	.00	215	3	98.6
		1.00	55	2	3.5
	Overall Percentage				78.9

a. The cut value is .500

6.6.4.4 Follow up PHQ-9 predicted by baseline mental health

Table 110 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
50.014	7	.000

Table 111 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.211	.5047	-.778	1.200	.174	1	.676
PCL-C	.002	.0838	-.162	.167	.001	1	.978
GHQ-12	-.061	.1353	-.326	.205	.200	1	.655
GAD-2	.300	.6676	-1.008	1.609	.203	1	.653
PHQ-2	1.612	.4119	.805	2.419	15.314	1	.000
Sleep dissatisfaction	.601	.5500	-.477	1.679	1.194	1	.274
Sleep disturbance	3.541	4.0816	-4.459	11.541	.753	1	.386

Linear regression repeated with predictor variables with p values < .4:

Table 112 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
49.653	4	.000

Table 113 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.196	.5043	-.792	1.185	.152	1	.697
PHQ total	1.621	.3305	.973	2.269	24.061	1	.000
Sleep satisfaction	.616	.4963	-.357	1.588	1.539	1	.215
Sleep problem impact function	3.807	3.9989	-4.030	11.645	.907	1	.341

Only one predictor <.1 therefore automatically added to logistic model:

Table 114 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
12.443	2	.002

Table 115 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.186	.2915	-.757	.385	.407	1	.524	.830	.469	1.470
PHQ case baseline	1.203	.3537	.510	1.896	11.564	1	.001	3.330	1.665	6.660

Chi-Square run as Hosmer-Lemeshow: test indicated poor model fit:

Table 116 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	0	.

Table 117 Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	293.242[a]	.043	.064

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

PHQ Chi-Square test:

Table 118 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	13.568[a]	1	.000		
Continuity Correction[b]	12.181	1	.000		
Likelihood Ratio	12.138	1	.000		
Fisher's Exact Test				.001	.000
Linear-by-Linear Association	13.518	1	.000		
N of Valid Cases	275				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.48.

b. Computed only for a 2x2 table

Table 119 PHQ Case * PHQ follow up Crosstabulation

			PHQ follow up		
			.00	1.00	Total
PHQ Case	Not a Case	Count	185	47	232
		% within PHQ Case	79.7%	20.3%	100.0%
		% within PHQ follow up	88.9%	70.1%	84.4%
		% of Total	67.3%	17.1%	84.4%
	Case	Count	23	20	43
		% within PHQ Case	53.5%	46.5%	100.0%
		% within PHQ follow up	11.1%	29.9%	15.6%
		% of Total	8.4%	7.3%	15.6%
Total		Count	208	67	275
		% within PHQ Case	75.6%	24.4%	100.0%
		% within PHQ follow up	100.0%	100.0%	100.0%
		% of Total	75.6%	24.4%	100.0%

6.6.4.5 Sleep satisfaction predicted by baseline mental health

Table 120 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
15.459	7	.031

Table 121 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Odds Ratio (95% Confidence Interval)	**Hypothesis Test**	
			Lower	Upper		df	**Sig.**
Group number	.444	.3090	-.161	1.050	1.560 (.851-2.858)	1	**.150**
PCL-C total	.041	.0402	-.038	.120	1.042 (.963-1.128)	1	**.305**
GHQ-12 total	-.092	.0876	-.263	.080	INV 1.096 (.923-1.302	1	**.294**
GAD-2 total	.308	.3740	-.425	1.041	1.360 (.654-2.832)	1	**.411**
PHQ-2 total	-.433	.2328	-.889	.023	INV 1.543	1	**.063**

					(.978-2.433)		
Sleep dissatisfaction	-.604	.3548	-1.300	.091	INV 1.832 (.913-3.663)	1	**.088**
Sleep disturbance	**-.629**	**1.0529**	**-2.693**	**1.434**	**INV 1.876 (.238-14.706)**	**1**	**.550**

Predictors <.4 in additional model:

Table 122 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
14.720	6	.023

Table 123 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.441	.3064	-1.042	.159	2.074	1	.150	.643	.353	1.173
Sleep satisfaction	.595	.3540	-.099	1.289	2.823	1	.093	1.813	.906	3.628
PCL total	-.048	.0389	-.125	.028	1.539	1	.215	.953	.883	1.028
GHQ total	.075	.0869	-.095	.245	.744	1	.388	1.078	.909	1.278
PHQ total	.402	.2338	-.056	.861	2.961	1	.085	1.495	.946	2.365
Sleep problem impact function	.325	1.0033	-1.641	2.291	.105	1	.746	1.384	.194	9.889

Predictor <.1 included in next logistic model:

Table 124 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
17.711	3	.001

Table 125 Logistic regression model test

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.517	.2847	-1.075	.041	3.292	1	.070	.597	.341	1.042
Sleep satisfaction	.671	.2980	.087	1.255	5.064	1	.024	1.955	1.090	3.507
PHQ total	.290	.1505	-.005	.585	3.714	1	.054	1.336	.995	1.795

Sleep satisfaction <.05, so added to logistic model individually:

Table 126 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
13.766	2	.001

Table 127 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.524	.2820	-1.077	.028	3.458	1	.063	.592	.341	1.029
Sleep satisfaction	.803	.2883	.238	1.368	7.761	1	.005	2.233	1.269	3.928

However Hosmer-Lemeshow indicated poor model fit:
Table 128 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	0	.

Table 129 Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	316.160[a]	.035	.051

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Therefore McNemar test run for repeated measures (see main *results* section).

6.6.4.6 Sleep distress predicted by baseline mental health

Table 130 Logistic regression model test

Likelihood ratio Chi-Square	Df	Significance
6.910	7	.438

Table 131 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Odds Ratio (95% Confidence Interval)	**Hypothesis Test**	
			Lower	Upper		df	**Sig.**
Group number	-.608	.6107	-1.805	.589	INV 1.835 (.555-6.061)	1	**.320**

PCL-C total	-.068	.0529	-.171	.036	INV 1.070 (.964-1.186)	1	**.202**
GHQ-12 total	.201	.1386	-.070	.473	1.223 (.932-1.605)	1	**.146**
GAD-2 total	.617	.5200	-.402	1.636	1.854 (.669-5.136)	1	**.235**
PHQ-2 total	-.079	.3878	-.839	.681	INV 1.082 (.506-2.315)	1	**.838**
Sleep dissatisfaction	.607	.6912	-.748	1.961	1.834 (.473-7.109)	1	**.380**
Sleep disturbance	**.698**	**1.1793**	**-1.613**	**3.010**	**2.010 (.199-20.279)**	**1**	**.554**

6.6.5 Hypothesis four

6.6.5.1 Baseline predictors of leadership satisfaction:

Table 132 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
24.166	7	.001

Table 133 Linear regression parameter Estimates

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.137	.1607	-.178	.452	.726	1	.394
Sleep satisfaction	.141	.1751	-.202	.485	.650	1	.420
PHQ total	.305	.1428	.025	.585	4.568	1	.033
PCL total	-.025	.0203	-.064	.015	1.456	1	.228
GHQ total	.105	.0505	.006	.204	4.312	1	.038
GAD total	.100	.2123	-.316	.516	.222	1	.638
Sleep problem affects function	-1.207	.6232	-2.428	.014	3.751	1	.053

Predictors <.4:

Table 134 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.

23.265	5	.000

Table 135 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.112	.1587	-.199	.423	.495	1	.482
PHQ total	.310	.1413	.033	.587	4.810	1	.028
PCL total	-.018	.0182	-.053	.018	.955	1	.328
GHQ total	.112	.0489	.016	.208	5.277	1	.022
Sleep problem affect function	-1.093	.5886	-2.247	.061	3.447	1	.063

Predictors <.1:

Table 136 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
22.326	4	.000

Table 137 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.121	.1593	-.191	.433	.579	1	.447
PHQ total	.251	.1281	.000	.502	3.837	1	.050
GHQ total	.099	.0460	.009	.189	4.673	1	.031
Sleep problem affect function	-1.145	.5712	-2.265	-.026	4.020	1	.045

Logistic model with sleep affecting function included caused a quasi-complete separation in the data, therefore model was invalid. Removal of this variable produced a valid logistic model:

Table 138 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
8.936	2	.011

Table 139 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	.146	.3075	-.457	.749	.226	1	.635	1.157	.633	2.114
GHQ total	.196	.0621	.074	.318	9.954	1	.002	1.216	1.077	1.374

However the model showed a poor fit and low predictive value:

Table 140 Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	270.959[a]	.031	.049

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 141 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8.797	3	.032

Table 142 Model predictive power

	Observed		Predicted		
			Leadership satisfaction		Percentage Correct
			.00	1.00	
Step 1	Leadership satisfaction	.00	222	1	99.6
		1.00	56	0	.0
	Overall Percentage				79.6

a. The cut value is .500

Therefore Chi-Square test run:

Table 143 Leadership satisfaction * GHQ Baseline Crosstabulation

			GHQ Baseline		
			Not a CMD Case	CMD Case	Total
Leadership satisfaction	.00	Count	198	25	223
		% within Leadership satisfaction	88.8%	11.2%	100.0%
		% within GHQ Baseline	81.5%	69.4%	79.9%
		% of Total	71.0%	9.0%	79.9%
	1.00	Count	45	11	56
		% within Leadership satisfaction	80.4%	19.6%	100.0%
		% within GHQ Baseline	18.5%	30.6%	20.1%
		% of Total	16.1%	3.9%	20.1%
Total		Count	243	36	279

	% within Leadership satisfaction	87.1%	12.9%	100.0%
	% within GHQ Baseline	100.0%	100.0%	100.0%
	% of Total	87.1%	12.9%	100.0%

Table 144 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.832[a]	1	.092		
Continuity Correction[b]	2.131	1	.144		
Likelihood Ratio	2.588	1	.108		
Fisher's Exact Test				.117	.076
Linear-by-Linear Association	2.822	1	.093		
McNemar Test				.022[c]	
N of Valid Cases	279				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.23.
b. Computed only for a 2x2 table
c. Binomial distribution used.

6.6.5.2 Baseline predictors of unit cohesion

All predictors in linear model:
Table 145 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
27.864	7	.000

Table 146 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.031	.1448	-.253	.315	.047	1	.829
PCL total	-.030	.0177	-.065	.004	2.961	1	.085
GHQ total	.161	.0533	.057	.266	9.130	1	.003
GAD total	-.069	.2060	-.473	.335	.112	1	.738
PHQ total	.230	.1411	-.047	.507	2.654	1	.103
Sleep satisfaction	.109	.1541	-.193	.411	.500	1	.480
Sleep problem affect function	-.702	.6517	-1.980	.575	1.162	1	.281

Predictors <.4:
Table 147 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
27.278	5	.000

Table 148 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.013	.1435	-.269	.294	.008	1	.929
PCL total	-.029	.0170	-.063	.004	2.987	1	.084
GHQ total	.160	.0524	.057	.262	9.291	1	.002
PHQ total	.223	.1409	-.053	.499	2.500	1	.114
Sleep problem affect function	-.760	.6136	-1.962	.443	1.533	1	.216

Outliers present in model, as regression re-run and PCL less significant with outliers removed:

Table 149 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
32.302	5	.000

Table 150 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.066	.1376	-.336	.204	.229	1	.632
PCL total	-.026	.0170	-.059	.007	2.364	1	.124
GHQ total	.179	.0516	.078	.280	12.073	1	.001
PHQ total	.177	.1350	-.088	.441	1.713	1	.191
Sleep problem affect function	-.751	.6238	-1.973	.472	1.449	1	.229

Overall model significance not altered PCL excluded at next level:

Table 151 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
24.208	3	.000

Table 152 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.043	.1333	-.304	.218	.105	1	.746
PCL total	-.012	.0165	-.045	.020	.559	1	.455
GHQ total	.180	.0438	.094	.265	16.785	1	.000

Non-GLM logistic regression:

Table 153 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	208.424[a]	.029	.054

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 154 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	1.463	3	.691

Table 155 Model predictive power

Observed		Predicted		
		Cohesion		Percentage Correct
		.00	1.00	
Cohesion	.00	251	0	100.0
	1.00	36	0	.0
Overall Percentage				87.5

a. The cut value is .500

6.6.5.3 Follow up predictors of leadership satisfaction

All predictors:

Table 156 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
17.653	7	.014

Table 157 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.041	.2091	-.369	.451	.039	1	.844
PCL total	-.021	.0170	-.055	.012	1.541	1	.214
GHQ total	.071	.0619	-.050	.193	1.323	1	.250
GAD total	.099	.0451	.010	.187	4.804	1	.028
PHQ total	.041	.0395	-.036	.119	1.095	1	.295
Sleep satisfaction	-.022	.2195	-.452	.408	.010	1	.920
Sleep problem impact function	-.395	.3845	-1.148	.359	1.055	1	.304

Predictors <.4 (and non-correlating; GAD chosen, as most significant):

Table 158 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
15.695	5	.008

Table 159 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.069	.2110	-.345	.482	.107	1	.744
GAD total	.097	.0316	.035	.159	9.440	1	.002
GHQ total	.052	.0646	-.074	.179	.660	1	.417
Sleep satisfaction	.035	.2211	-.398	.469	.026	1	.873
Sleep problem impact function	-.409	.4012	-1.195	.378	1.037	1	.308

Predictors <.1:

Table 160 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
31.860	2	.000

Table 161 Linear regression parameter estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.096	.1402	-.179	.371	.467	1	.494
GAD total	.116	.0241	.069	.163	23.097	1	.000

Non-GLM logistic regression:

Table 162 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	246.616[a]	.066	.105

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 163 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	3.371	5	.643

Table 164 Model predictive power

Observed			Predicted		
			Leadership satisfaction		Percentage Correct
			.00	1.00	
Step 1	Leadership satisfaction	.00	214	5	97.7
		1.00	48	4	7.7
	Overall Percentage				80.4

a. The cut value is .500

6.6.5.4 Follow up predictors of unit cohesion:

Table 165 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
14.867	7	.038

Table 166 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.361	.1988	-.750	.029	3.291	1	.070
PCL total	-.014	.0190	-.052	.023	.570	1	.450
GHQ total	-.013	.0683	-.147	.121	.037	1	.848
GAD total	.053	.0407	-.026	.133	1.719	1	.190
PHQ total	.044	.0326	-.020	.108	1.826	1	.177
Q30sleep_satREC	.145	.2103	-.267	.557	.476	1	.490
Q31sleep_distREC	.063	.4101	-.741	.867	.024	1	.878

Most significant of correlating variables was PHQ-9, therefore that selected for re-run with other non-correlating predictors:

Table 167 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
12.406	5	.030

Table 168 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.321	.2056	-.724	.082	2.439	1	.118
GHQ total	-.018	.0634	-.143	.106	.083	1	.774
PHQ total	.062	.0261	.011	.113	5.681	1	.017
Sleep satisfaction	.178	.2158	-.245	.601	.678	1	.410
Sleep problem impact function	.114	.4153	-.700	.928	.076	1	.783

PHQ-9 only predictor <.1, therefore regression run with individual predictor:

Table 169 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
31.107	2	.000

Table 170 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.028	.1307	-.284	.228	.047	1	.829
PHQ total	.098	.0203	.058	.138	23.135	1	.000

Non-GLM model:

Table 171 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	191.535[a]	.040	.077

Table 172 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	5.466	5	.362

Table 173 Model predictive power

	Observed		Predicted		
			Cohesion		Percentage Correct
			.00	1.00	
Step 1	Cohesion	.00	245	1	99.6
		1.00	32	1	3.0
	Overall Percentage				88.2

a. The cut value is .500

6.6.5.5 Perceived unit cohesion and satisfaction predicting follow up mental health

6.6.5.5.1 PCL-C

Table 174 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
PCL-C	31.713	3	.000

Table 175 Linear regression parameter Estimates

	PCL-C				
Parameter	B	Standard error	95% confidence interval		**P value**
			Lower	Upper	
Group number	-.879	.9979	-2.835	1.077	**.378**
Cohesion Total	1.099	.4852	.148	2.050	**.024**
Leadership Total	**.721**	**.1987**	**.331**	**1.110**	**.000**

Non-GLM logistic model:

Table 176 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	266.663[a]	.062	.095

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 177 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4.755	6	.576

Table 178 Model predictive power

Observed			Predicted		
			PCL follow up		Percentage Correct
			.00	1.00	
Step 1	PCL follow up	.00	207	5	97.6
		1.00	53	6	10.2
	Overall Percentage				78.6

a. The cut value is .500

6.6.5.5.2 GHQ-12

Table 179 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
10.746	3	.013

Table 180 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.175	.2246	-.615	.266	.604	1	.437
Cohesion Total	.138	.1147	-.086	.363	1.457	1	.227
Leadership total	.214	.1139	-.010	.437	3.515	1	.061

Non-GLM logistic model:

Table 181 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	239.940[a]	.024	.040

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 182 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	2.421	6	.877

Table 183 Model predictive power

	Observed		Predicted		
			GHQ follow up		Percentage Correct
			.00	1.00	
Step 1	GHQ follow up	.00	224	0	100.0
		1.00	46	0	.0
	Overall Percentage				83.0

a. The cut value is .500

6.6.5.5.3 GAD-7

Table 184 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
GAD-7	57.668	3	.000

Table 185 Linear regression parameter Estimates

	GAD-7				
Parameter	B	Standard error	95% confidence interval		**P value**
			Lower	Upper	
Group number	-.188	.0887	-.362	-.014	**.034**
Cohesion Total	.145	.0447	.057	.232	**.001**
Leadership Total	**.081**	**.0170**	**.047**	**.114**	**.000**

Non-GLM logistic model:

Table 186 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	248.501[a]	.087	.136

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 187 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	9.384	6	.153

Table 188 Model predictive power

	Observed		Predicted		
			GAD follow up		Percentage Correct
			.00	1.00	
Step 1	GAD follow up	.00	210	5	97.7
		1.00	48	7	12.7
	Overall Percentage				80.4

a. The cut value is .500

6.6.5.5.4 PHQ-9

Table 189 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
PHQ-9	43.561	3	.000

Table 190 Linear regression parameter Estimates

PHQ-9					
Parameter	B	Standard error	95% confidence interval		**P value**
			Lower	Upper	
Group number	-.384	.4242	-1.215	.448	**.366**
Cohesion Total	.664	.2049	.262	1.065	**.001**
Leadership Total	**.322**	**.0715**	**.181**	**.462**	**.000**

Non-GLM logistic model

Table 191 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	267.649[a]	.115	.172

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 192 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	9.402	6	.152

Table 193 Model predictive power

	Observed	Predicted

			PHQ follow up		Percentage Correct
			.00	1.00	
Step 1	PHQ follow up	.00	196	9	95.6
		1.00	51	15	22.7
	Overall Percentage				77.9

a. The cut value is .500

6.6.5.5.5 Sleep satisfaction

Logistic run originally therefore reported in parameter estimates in main results

Table 194 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	303.268[a]	.059	.085

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 195 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	3.815	6	.702

Table 196 Model predictive power

	Observed		Predicted		
			Sleep satisfaction		Percentage Correct
			.00	1.00	
Step 1	Sleep satisfaction	.00	188	8	95.9
		1.00	64	11	14.7
	Overall Percentage				73.4

a. The cut value is .500

6.6.6 Hypothesis five

6.6.6.1 Predictors of cohesion

Table 197 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
1.964	3	.580

Table 198 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.080	.1413	-.357	.197	.320	1	.572

Combat exposure	-.013	.0105	-.033	.008	1.491	1	.222
Operational exposure	.018	.0772	-.134	.169	.053	1	.818

Operational exposure removed from model (see main results section)

6.6.6.2 Predictors of leadership satisfaction

Table 199 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
2.308	3	.511

Table 200 Linear regression parameter Estimates

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.081	.1494	-.373	.212	.292	1	.589
Combat exposure	-.016	.0100	-.035	.004	2.429	1	.119
Operational exposure	.036	.0793	-.119	.192	.210	1	.647

Operational exposure removed from model (see main results section)

6.6.7 Hypothesis six

6.6.7.1 Baseline stigma, predicted by baseline mental health and rank

Table 201 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
Stigma baseline	35.764	9	.000

Table 202 Linear regression parameter Estimates

	Stigma baseline				
Parameter	B	Standard error	95% confidence interval		**P value**
			Lower	Upper	

Group number	.511	.2145	.091	.932	**.017**
Junior or senior rank	-.250	.2272	-.696	.195	**.271**
All previous tours	-.019	.0345	-.087	.048	**.578**
Sleep dissatisfaction	.348	.2145	-.072	.769	**.104**
Sleep functionality	.846	.5455	-.223	1.915	**.121**
GHQ-12	.006	.0717	-.135	.146	**.934**
GAD-2	.194	.3342	-.461	.849	**.562**
PHQ-2	.101	.1846	-.260	.463	**.583**
PCL-C	**.054**	**.0315**	**-.007**	**.116**	**.084**

6.6.7.2 Follow up stigma predicted by baseline mental health

Table 203 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
Follow up stigma	14.808	9	.096

Table 204 Linear regression parameter Estimates

	Follow up stigma (baseline mental health predictors)				
Parameter	B	Standard error	95% confidence interval		**P value**
			Lower	Upper	
Group number	.588	.3442	-.087	1.262	**.088**
Junior or senior rank	-.196	.3774	-.935	.544	**.604**
All previous tours	.114	.0780	-.039	.267	**.143**
PCL-C	-.013	.0460	-.104	.077	**.770**
GHQ-12	.442	.3103	-.167	1.050	**.155**
GAD-7	.015	.4331	-.834	.864	**.973**
PHQ-9	.382	.3691	-.341	1.106	**.300**
Sleep dissatisfaction	.053	.1068	-.157	.262	**.622**
Sleep disturbance	**.936**	**1.2377**	**-1.490**	**3.362**	**.449**

6.6.7.3 Follow up stigma predicted by follow up mental health

Table 205 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
Follow up stigma	15.998	9	.067

Table 206 Linear regression parameter Estimates

	Follow up stigma (follow up mental health predictors)				
Parameter	B	Standard error	95% confidence interval		**P value**
			Lower	Upper	
Group number	.068	.4439	-.802	.938	**.878**
Junior or senior rank	.269	.4788	-.670	1.207	**.575**
All previous tours	-.088	.0988	-.282	.105	**.371**

PCL-C	.064	.0377	-.010	.138	**.088**
GHQ-12	-.013	.1547	-.316	.290	**.932**
GAD-7	-.092	.0772	-.243	.059	**.234**
PHQ-9	.140	.0757	-.009	.288	**.065**
Sleep dissatisfaction	.306	.4735	-.622	1.234	**.517**
Sleep disturbance	**-.745**	**.8990**	**-2.507**	**1.017**	**.407**

6.6.8 Hypothesis seven

6.6.8.1 Transition

Table 207 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
Transition	41.828	7	.000

Table 208 Linear regression parameter estimates

	Transition				
Parameter	B	Standard error	95% confidence interval		**P value**
			Lower	Upper	
Group number	-.028	.2405	-.500	.443	**.907**
PCL-C	.027	.0382	-.048	.102	**.480**
PHQ-2	.205	.1908	-.170	.579	**.284**
GAD-2	-.269	.3510	-.957	.419	**.443**
GHQ-12	.219	.0789	.064	.373	**.006**
Sleep function	.643	1.0607	-1.436	2.722	**.545**
Sleep dissatisfaction	**.486**	**.2542**	**-.012**	**.984**	**.056**

Table 209 Linear regression model test

Transition model with predictors < .4:

Likelihood Ratio Chi-Square	df	Sig.
47.097	4	.000

Table 210 Linear regression parameter Estimates

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.169	.2147	-.590	.251	.623	1	.430
GHQ total	.231	.0696	.095	.368	11.040	1	.001
PHQ total	.201	.1370	-.067	.470	2.159	1	.142
Sleep satisfaction	.525	.2247	.084	.965	5.456	1	.020

GHQ and sleep satisfaction were entered into the logistic regression model, as p <.1:

Table 211 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
16.149	3	.001

Table 212 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.339	.3158	-.958	.280	1.150	1	.284	.713	.384	1.323
GHQ total	.212	.0680	.079	.345	9.705	1	.002	1.236	1.082	1.412
Sleep satisfaction	.419	.3375	-.242	1.081	1.542	1	.214	1.521	.785	2.947

GHQ entered into final model as p<.05, parameter estimates in main *results*:

Table 213 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	276.875[a]	.050	.078

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 214 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	21.555	3	.000

Table 215 Model predictive power

Observed			Predicted		
			Transition		Percentage Correct
			.00	1.00	
Step 1	Transition	.00	223	5	97.8
		1.00	51	8	13.6
	Overall Percentage				80.5

a. The cut value is .500

6.6.8.2 Spouse relationship change

Table 216 Logistic regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
Relationship change	28.027	7	.000

Table 217 Logistic regression parameter Estimates

Relationship with spouse change							
Parameter	B	Std. Error	95% Wald Confidence Interval		Odds Ratio (95% Confidence Interval)	**Hypothesis Test**	
			Lower	Upper		df	**Sig.**
Group number	-.544	-.544	-1.347	.259	INV 1.721 (.772-3.846)	1	**.185**
PCL-17	-.058	-.058	-.137	.022	INV 1.059 (.978-1.147)	1	**.154**
GHQ-12	.449	.449	.233	.665	1.567 (1.263-1.945)	1	**.000**
GAD-2	.218	.218	-.585	1.020	1.243 (.557-2.773)	1	**.595**
PHQ-2	-.165	-.165	-.841	.510	INV 1.179 (.600-2.320)	1	**.631**
Sleep dissatisfaction	.040	.040	-.877	.957	1.041 (.416-2.604)	1	**.931**
Sleep disturbance	**.695**	**.695**	**-1.540**	**2.930**	**2.004 (.214-18.734)**	**1**	**.542**

The logistic regression was re-run with predictor variables with p values of <.4:

Table 218 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
32.447	3	.000

Table 219 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.587	.3723	-1.317	.142	2.490	1	.115	.556	.268	1.153
PCL total	-.048	.0324	-.111	.016	2.164	1	.141	.953	.895	1.016
GHQ total	.458	.0925	.277	.639	24.552	1	.000	1.581	1.319	1.895

GHQ only variable <.05 therefore added individually to final regression model, overall significance and parameter estimates in main *results*, non-GLM logistic regression below:

Table 220 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	197.391[a]	.109	.184

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	197.391[a]	.109	.184

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 221 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	1.986	3	.575

Table 222 Model predictive power

	Observed		Predicted		
			Q15FUrec		Percentage Correct
			.00	1.00	
Step 1	Q15FUrec	.00	204	4	98.1
		1.00	32	10	23.8
	Overall Percentage				85.6

a. The cut value is .500

6.6.8.3 Satisfaction with spouse relationship

Table 223 Logistic regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
Happy with relationship	23.494	7	.001

Table 224 Logistic regression parameter Estimates

Happy with relationship with partner							
Parameter	B	Std. Error	95% Wald Confidence Interval		Odds Ratio (95% Confidence Interval)	**Hypothesis Test**	
			Lower	Upper		df	**Sig.**
Group number	-.975	.5881	-2.128	.178	INV 2.653 (.838-8.403)	1	**.097**
PCL-C	-.062	.0617	-.183	.059	INV 1.064 (.943-1.200)	1	**.315**
GHQ-12	.561	.1525	.262	.860	1.753 (1.300-2.363)	1	**.000**
GAD-2	.547	.5161	-.464	1.559	1.728 (.629-4.753)	1	**.289**
PHQ-2	-.241	.4199	-1.064	.582	INV 1.272 (.559-2.899)	1	**.566**
Sleep	-1.519	.7807	-3.049	.011	INV 4.566	1	**.052**

dissatisfaction					(.989-21.277)		
Sleep disturbance	**-20.820**	**.9293**	**-22.641**	**-18.998**	**.000 (.000-.000)**	**1**	**.000**

Predictors with a p value < .4 were re-run in logistic regression, 'sleep disturbance' caused a quasi-complete separation in the data set, so was removed from the model:

Table 225 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
20.569	5	.001

Table 226 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.867	.5165	-1.879	.146	2.815	1	.093	.420	.153	1.157
GHQ total	.510	.1337	.248	.772	14.533	1	.000	1.665	1.281	2.163
PCL total	-.107	.0725	-.249	.036	2.159	1	.142	.899	.780	1.036
GAD total	.304	.4477	-.573	1.182	.462	1	.497	1.356	.564	3.260
Sleep satisfaction	-.598	.6786	-1.928	.732	.776	1	.378	.550	.145	2.080

Predictor <.1 were run in the next regression, as this was only one predictor, this was the final model, overall significance and parameter estimates in main *results*, non-GLM logistic regression reported below:

Table 227 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	123.838[a]	.061	.145

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 228 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	3.473	3	.324

Table 229 Model predictive power

Observed			Predicted		
			Q16FUbinary		Percentage Correct
			.00	1.00	
Step 1	Q16FUbinary	.00	233	0	100.0
		1.00	19	1	5.0
	Overall Percentage				92.5

a. The cut value is .500

6.6.8.4 Impact of deployment on children

All predictor variables:

Table 230 Logistic regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
Effect on child	5.394	6	.494

Table 231 Logistic regression parameter Estimates

	Effect on child						
Parameter	B	Std. Error	95% Wald Confidence Interval		Odds Ratio (95% Confidence Interval)	**Hypothesis Test**	
			Lower	Upper		df	**Sig.**
Group number	.276	.3907	-.490	1.042	1.318 (.613-2.834)	1	**.480**
PCL-17	-.008	.0570	-.119	.104	INV 1.009 (.901-1.126)	1	**.892**
GHQ-12	-.021	.1222	-.260	.219	INV 1.021 (.803-1.297)	1	**.865**
GAD-2	-.247	.5133	-1.253	.759	INV 1.280 (.468-3.497)	1	**.631**
PHQ-2	.027	.3294	-.618	.673	1.028 (.539-1.960)	1	**.934**
Sleep dissatisfaction	.951	.4405	.087	1.814	2.587 (1.091-6.135)	1	**.031**
Sleep disturbance	**0**[4]	**.**	**.**	**.**	**1**	**.**	**.**

Logistic with predictor <.4:

Table 232 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	204.584[a]	.026	.035

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

Little variance predicted

Table 233 Model predictive power

	Observed		Predicted		
			Q17FUrec		Percentage Correct
			.00	1.00	
Step 1	Q17FUrec	.00	38	27	58.5
		1.00	37	51	58.0
	Overall Percentage				58.2

a. The cut value is .500

[4] Set to zero as no events in this regression

Therefore chi-square test run as model above low validity (in main results).

Table 234 Effect on children * Sleep Satisfaction Crosstabulation

			Sleep Satisfaction		
			Satisfied	Dissatisfied	Total
Effect on children	.00	Count	38	27	65
		% within Effect on children	58.5%	41.5%	100.0%
		% within Sleep Satisfaction	50.7%	34.6%	42.5%
	1.00	Count	37	51	88
		% within Effect on children	42.0%	58.0%	100.0%
		% within Sleep Satisfaction	49.3%	65.4%	57.5%
Total		Count	75	78	153
		% within Effect on children	49.0%	51.0%	100.0%
		% within Sleep Satisfaction	100.0%	100.0%	100.0%

Table 235 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.032[a]	1	.045		
Continuity Correction[b]	3.401	1	.065		
Likelihood Ratio	4.048	1	.044		
Fisher's Exact Test				.051	.032
Linear-by-Linear Association	4.005	1	.045		
N of Valid Cases	153				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 31.86.
b. Computed only for a 2x2 table

6.6.8.5 Re-establishing relationship with child

Table 236 Logistic regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
Re-establishing relationship	15.891	6	.014

Table 237 Logistic regression parameter Estimates

Difficulty re-establishing relationship with child							
Parameter	B	Std. Error	95% Wald Confidence Interval		Odds Ratio (95% Confidence Interval)	**Hypothesis Test**	
			Lower	Upper		df	**Sig.**
Group number	-.388	.3931	-1.158	.383	INV 1.473 (.682-3.185)	1	**.324**
PCL-C	-.004	.0712	-.143	.136	INV 1.004 (.873-1.153)	1	**.961**
GHQ-12	.213	.1540	-.089	.515	1.237 (.915-	1	**.167**

					1.673)		
GAD-2	-.590	.6029	-1.772	.592	INV 1.805 (.553-5.882)	1	**.328**
PHQ-2	.226	.3710	-.501	.954	1.254 (.606-2.595)	1	**.542**
Sleep dissatisfaction	.781	.4316	-.065	1.627	2.184 (.937-5.088)	1	**.070**
Sleep disturbance	**0[4]**	**.**	**.**	**.**	**1**	**.**	**.**

Non-GLM logistic regression:

Table 238 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	186.427[a]	.124	.166

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 239 Model predictive power

	Observed		Predicted		
			Q18FUrec		Percentage Correct
			.00	1.00	
Step 1	Q18FUrec	.00	74	12	86.0
		1.00	36	29	44.6
	Overall Percentage				68.2

a. The cut value is .500

6.6.9 Hypothesis eight

6.6.9.1 PCL-C Baseline

Table 240 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
PCL-C	25.019	16	.069

Table 241 Linear regression parameter Estimates

	PCL-C baseline				
Parameter	B	Standard error	95% confidence interval		**P value**
			Lower	Upper	
Group number	.238	.7586	-1.249	1.725	**.754**
Rank (Junior vs. Senior)	.351	.8755	-1.365	2.067	**.688**

In a relationship (y/n)	2.652	2.4012	-2.055	7.358	**.269**
Age group (up to 24 years vs. older)	1.638	1.3118	-.933	4.209	**.212**
Short (1-4 years) vs. Long (5 years or more) service	.412	1.6587	-2.839	3.663	**.804**
Regular or Reserve	.457	1.7360	-2.945	3.860	**.792**
Individual Augmenters vs. Formed Unit	.693	.8875	-1.047	2.432	**.435**
Number of tours	-.153	.1247	-.398	.091	**.219**
Combat exposure scale score	.155	.1056	-.052	.361	**.143**
Operational exposure score	1.005	.4231	.175	1.834	**.018**
Relationship change since return home	-.272	1.4156	-3.047	2.502	**.848**
How happy are you with relationship	1.214	1.1342	-1.008	3.437	**.284**
Deployment had effect on children	.038	.8434	-1.615	1.691	**.964**
Difficulty re-establishing relationship with children	1.513	.7759	-.007	3.034	**.051**
Adverse childhood experiences	.282	.1930	-.096	.660	**.144**
AUDIT (alcohol) (Square root transformed)	**.259**	**.3910**	**-.508**	**1.025**	**.508**

One significant predictor from linear (after transforming)

Table 242 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
42.714	7	.000

Table 243 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.021	.0111	-.043	.000	3.684	1	.055
Aversive child experiences	.002	.0023	-.003	.006	.473	1	.491
Relationship status	.014	.0176	-.021	.048	.612	1	.434
Age	-.018	.0185	-.054	.018	.927	1	.336
Tours	.001	.0019	-.003	.005	.376	1	.540
Combat exposure	.004	.0011	.002	.006	14.324	1	.000
Operational exposure	.010	.0062	-.003	.022	2.344	1	.126

Variables with p<.4 re-run in linear model:

Table 244 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
39.694	4	.000

Table 245 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.024	.0110	-.045	-.002	4.555	1	.033
Age	-.017	.0185	-.053	.019	.841	1	.359
Combat exposure	.004	.0011	.002	.006	11.139	1	.001
Operational exposure	.011	.0064	-.002	.024	2.928	1	.087

Only group number and combat exposure achieved p values <.05 therefore were included in the logistic model:

Table 246 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
17.545	2	.000

Table 247 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.397	.4950	-1.367	.573	.643	1	.423	.672	.255	1.774
Combat exposure	.097	.0241	.050	.144	16.256	1	.000	1.102	1.051	1.155

Table 248 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	134.089[a]	.056	.139

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 249 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	1.855	7	.967

Table 250 Model predictive power

	Observed		Predicted		
			PCL Case Scoring 30 or More		Percentage Correct
			Not a Case	Case	
Step 1	PCL Case Scoring 30 or More	Not a Case	270	1	99.6
		Case	19	2	9.5
	Overall Percentage				93.2

a. The cut value is .500

6.6.9.2 GHQ-12 Baseline

Table 251 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
14.420	11	.211

Table 252 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.239	.2598	-.748	.270	.847	1	.357
Rank	-.396	.3092	-1.002	.210	1.641	1	.200
Relationship status	.208	.3380	-.454	.870	.378	1	.538
Age	-.338	.6642	-1.640	.964	.259	1	.611
Service length	-.315	.4930	-1.281	.651	.408	1	.523
Regular or reserve	-.441	.2910	-1.011	.129	2.297	1	.130
Individual augmentee vs. Formed unit	.005	.2696	-.523	.534	.000	1	.985
Previous tours	.036	.0439	-.050	.122	.676	1	.411
Combat exposure	.034	.0208	-.007	.075	2.694	1	.101
Operational exposure	.046	.1379	-.225	.316	.109	1	.741
Aversive childhood experiences	.040	.0547	-.067	.148	.541	1	.462

Outliers present, transformation of dependent variable did not increase the significance of the overall model or predictor variables, therefore original variable remained in model.

Regression repeated with predictors reporting p<.4:

Table 253 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.

13.297	4	.010

Table 254 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.194	.2362	-.657	.269	.675	1	.411
Rank	-.545	.2728	-1.079	-.010	3.985	1	.046
Regular or Reserve	-.658	.2385	-1.126	-.191	7.616	1	.006
Combat exposure	.034	.0157	.003	.065	4.703	1	.030

All predictors <.05 therefore all added to logistic regression:

Table 255 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	207.972[a]	.047	.088

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 256 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8.240	8	.410

Table 257 Model predictive power

Observed			Predicted		
			GHQ Four Symptoms or More		
			Not a CMD Case	CMD Case	Percentage Correct
Step 1	GHQ Four Symptoms or More	Not a CMD Case	255	0	100.0
		CMD Case	36	1	2.7
	Overall Percentage				87.7

a. The cut value is .500

6.6.9.3 GAD-2 Baseline

Table 258 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
GAD-2	28.498	16	.028

Table 259 Linear regression parameter Estimates

	GAD-2			
Parameter	B	Standard error	95% confidence interval	**P value**

			Lower	Upper	
Group number	.108	.0694	-.028	.244	**.119**
Rank (Junior vs. Senior)	-.001	.0726	-.143	.141	**.988**
In a relationship (y/n)	.358	.1874	-.009	.726	**.056**
Age group (up to 24 years vs. older)	.168	.1712	-.168	.504	**.326**
Short (1-4 years) vs. Long (5 years or more) service	-.484	.2776	-1.029	.060	**.081**
Regular or Reserve	.252	.1759	-.092	.597	**.151**
Individual Augmenters vs. Formed Unit	.063	.0676	-.069	.196	**.349**
Number of tours	-.009	.0141	-.036	.019	**.543**
Combat exposure scale score	.000	.0070	-.014	.014	**.989**
Operational exposure score	.049	.0419	-.033	.131	**.241**
Relationship change since return home	-.059	.1814	-.414	.297	**.747**
How happy are you with relationship	.150	.1037	-.053	.353	**.148**
Deployment had effect on children	.039	.0739	-.106	.184	**.596**
Difficulty re-establishing relationship with children	-.042	.0707	-.181	.097	**.554**
Adverse childhood experiences	.028	.0203	-.012	.068	**.167**
AUDIT (alcohol)	**.036**	**.0412**	**-.045**	**.117**	**.384**

The significance of the model was not improved by inclusion of predictor variables of p<.4 or <.3:

Table 260 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
7.393	9	.596

Table 261 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.051	.0639	-.177	.074	.646	1	.422
Relationship status	.004	.1163	-.224	.232	.001	1	.972
Alcohol use	.041	.0388	-.035	.117	1.132	1	.287
Age	.118	.1474	-.171	.407	.642	1	.423
Service length	-.199	.1620	-.516	.119	1.508	1	.219
Regular or Reserve	-.054	.1044	-.259	.150	.272	1	.602
Individual augmentee vs. formed unit	.064	.0672	-.068	.195	.903	1	.342
Operational exposure	.027	.0378	-.047	.101	.503	1	.478
Aversive child experiences	.020	.0158	-.011	.051	1.572	1	.210

6.6.9.4 PHQ-2 Baseline

Table 262 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
23.059	11	.017

Table 263 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.136	.1112	-.354	.082	1.502	1	.220
Rank	-.262	.1476	-.552	.027	3.155	1	.076
Relationship status	.238	.1348	-.026	.502	3.124	1	.077
Age	.143	.2929	-.431	.717	.238	1	.625
Service length	.021	.2296	-.429	.471	.008	1	.928
Regular or Reserve	-.129	.1436	-.411	.152	.812	1	.367
Individual augmentee vs. Formed unit	-.008	.1208	-.245	.228	.005	1	.945
Tours	.167	.1117	-.052	.386	2.245	1	.134
Combat exposure	.023	.0083	.007	.039	7.596	1	.006
Operational exposure	.051	.0705	-.087	.189	.531	1	.466
Aversive childhood experiences	.030	.0199	-.009	.069	2.251	1	.134

Predictors p<.4:

Table 264 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
28.462	7	.000

Table 265 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.115	.1063	-.323	.094	1.165	1	.280
Rank	-.202	.1220	-.441	.038	2.729	1	.099
Relationship status	.261	.1264	.013	.509	4.265	1	.039
Regular or Reserve	-.183	.1236	-.426	.059	2.196	1	.138
Tours	.222	.1077	.011	.434	4.267	1	.039
Combat exposure	.024	.0062	.012	.036	15.094	1	.000
Aversive childhood experiences	.045	.0215	.002	.087	4.310	1	.038

Predictors <.1:

Table 266 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.

27.460	6	.000

Table 267 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.114	.1063	-.322	.095	1.146	1	.284
Rank	-.195	.1224	-.435	.045	2.545	1	.111
Relationship status	.289	.1219	.050	.527	5.599	1	.018
Tours	.240	.1067	.031	.449	5.044	1	.025
Combat exposure	.024	.0062	.012	.036	15.568	1	.000
Aversive childhood experiences	.046	.0215	.004	.088	4.566	1	.033

Predictors <.05 in non-GLM logistic regression:

Table 268 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	233.199[a]	.055	.094

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 269 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	14.361	8	.073

Table 270 Model predictive power

Observed			Predicted		
			PHQ case baseline		Percentage Correct
			Not a Case	Case	
Step 1	PHQ case baseline	Not a Case	240	2	99.2
		Case	43	2	4.4
	Overall Percentage				84.3

a. The cut value is .500

6.6.9.5 Sleep satisfaction baseline

Table 271 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
15.229	11	.172

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Table 272 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.716	.2656	-1.237	-.196	7.271	1	.007	.489	.290	.822
Combat exposure	.028	.0199	-.012	.067	1.909	1	.167	1.028	.989	1.069
Rank	.156	.3112	-.454	.766	.251	1	.616	1.169	.635	2.151
Relationship status	.534	.3721	-.195	1.263	2.060	1	.151	1.706	.823	3.538
Age	-.287	.5609	-1.386	.812	.262	1	.609	.750	.250	2.253
Service length	-.574	.5155	-1.584	.437	1.238	1	.266	.564	.205	1.548
Regular vs. Reserve	.335	.4322	-.512	1.182	.601	1	.438	1.398	.599	3.261
Individual augmentee vs. Formed unit	.362	.2830	-.193	.917	1.637	1	.201	1.436	.825	2.501
Tours	.267	.2931	-.307	.842	.831	1	.362	1.306	.735	2.321
Danger	-.004	.1470	-.292	.284	.001	1	.977	.996	.746	1.328
Aversive childhood experiences	.026	.0455	-.063	.115	.319	1	.572	1.026	.938	1.122

Predictors <.4:

Table 273 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
15.230	6	.019

Table 274 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.718	.2611	-1.230	-.206	7.559	1	.006	.488	.292	.814
Combat exposure	.029	.0169	-.004	.062	2.883	1	.089	1.029	.996	1.064
Relationship status	.600	.3625	-.111	1.310	2.738	1	.098	1.822	.895	3.707
Service length	-.681	.4231	-1.511	.148	2.594	1	.107	.506	.221	1.159
Individual augmentee vs. Formed unit	.342	.2691	-.186	.869	1.614	1	.204	1.408	.831	2.385
Tours	.245	.2875	-.318	.809	.727	1	.394	1.278	.727	2.245

Predictors <.1:

Table 275 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
12.097	4	.017

Table 276 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.697	.2570	-1.201	-.194	7.364	1	.007	.498	.301	.824
Combat exposure	.025	.0168	-.008	.058	2.230	1	.135	1.025	.992	1.060
Service length	-.489	.4044	-1.281	.304	1.461	1	.227	.613	.278	1.355
Individual augmentee vs. Formed unit	.241	.2569	-.263	.744	.878	1	.349	1.272	.769	2.104

6.6.9.6 PCL-C Follow up

Table 277 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
PCL-C	77.053	16	.000

Table 278 Linear regression parameter Estimates

	PCL-C				
Parameter	B	Standard error	95% confidence interval		**P value**
			Lower	Upper	
Group number	-.171	1.0626	-2.254	1.911	**.872**
Rank (Junior vs. Senior)	1.240	1.2545	-1.219	3.699	**.323**
In a relationship (y/n)	-8.747	4.2699	-17.116	-.378	**.041**
Age group (up to 24 years vs. older)	-.011	2.3143	-4.547	4.525	**.996**
Short (1-4 years) vs. Long (5 years or more) service	2.548	3.5253	-4.362	9.457	**.470**
Regular or Reserve	-4.299	1.9638	-8.148	-.450	**.029**
Individual Augmenters vs. Formed Unit	2.475	1.0027	.510	4.441	**.014**
Number of tours	.167	.2161	-.256	.591	**.439**
Combat exposure scale score	.070	.0958	-.118	.258	**.464**
Operational exposure score	1.083	.7888	-.463	2.629	**.170**
Relationship change since	1.282	2.4096	-3.441	6.005	**.595**

return home					
How happy are you with relationship	4.165	1.5086	1.208	7.121	**.006**
Deployment had effect on children	.234	1.2145	-2.146	2.614	**.847**
Difficulty re-establishing relationship with children	5.528	1.1916	3.193	7.864	**.000**
Adverse childhood experiences	.450	.3287	-.195	1.094	**.171**
AUDIT (alcohol) (Square root transformed)	**1.182**	**.7085**	**-.206**	**2.571**	**.095**

Linear regression repeated with predictor variables <.4:

Table 279 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
72.813	10	.000

Table 280 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.168	1.1239	-2.035	2.371	.022	1	.881
Regular or Reserve	-.692	2.9060	-6.387	5.004	.057	1	.812
Rank	1.106	1.1992	-1.244	3.456	.851	1	.356
Relationship status	-5.325	2.3725	-9.975	-.675	5.037	1	.025
Individual augmentee vs. Formed unit	1.208	1.1416	-1.029	3.446	1.120	1	.290
Operational exposure	1.328	.7128	-.069	2.725	3.470	1	.062
Happy with relationship	5.429	1.1182	3.237	7.620	23.567	1	.000
Difficulty reestablishing relationship with child	5.686	1.0685	3.592	7.780	28.321	1	.000
Aversive childhood experiences	.356	.3181	-.268	.979	1.249	1	.264
Alcohol use	1.143	.6436	-.118	2.404	3.154	1	.076

Outliers existed within this model, therefore PCL transformed and analysis re-run, this did not affect overall model significance or alter predictors with p value <.1, therefore the non-transformed PCL was used to run the rest of the analyses and five predictors remained in the model:

Table 281 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
69.492	6	.000

Table 282 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.349	1.1393	-1.884	2.581	.094	1	.760
Relationship status	-5.916	2.3354	-10.493	-1.338	6.416	1	.011
Operational exposure	1.384	.7249	-.037	2.804	3.643	1	.056
Happy with relationship	5.302	1.1284	3.091	7.514	22.080	1	.000
Difficulty reestablishing relationship with child	5.919	1.1323	3.700	8.138	27.324	1	.000
Alcohol use	1.196	.6671	-.112	2.503	3.212	1	.073

Predictors with a p value <.05 were included in logistic regression, non-GLM regression displayed below:

Table 283 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	116.361[a]	.175	.276

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 284 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.480	3	.923

Table 285 Model predictive power

Observed			Predicted		
			PCLfuCase30orMore		Percentage Correct
			.00	1.00	
Step 1	PCLfuCase30orMore	.00	109	4	96.5
		1.00	21	8	27.6
	Overall Percentage				82.4

a. The cut value is .500

6.6.9.7 GHQ follow up

Table 286 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
29.284	16	.022

Table 287 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.114	.2951	-.465	.692	.148	1	.700
Combat exposure	-.017	.0246	-.066	.031	.505	1	.477
Service length	1.815	.6746	.493	3.138	7.242	1	.007
Individual augmentee vs formed unit	-.380	.2839	-.937	.176	1.793	1	.181
Rank	-.499	.3874	-1.258	.261	1.657	1	.198
Relationship status	-2.747	1.2661	-5.228	-.266	4.708	1	.030
Age	-.125	.8139	-1.720	1.470	.024	1	.878
Regular vs. Reserve	-.175	.4713	-1.099	.749	.138	1	.711
Tours	.029	.0658	-.100	.158	.193	1	.660
Operational exposure	.030	.1754	-.313	.374	.030	1	.863
Aversive childhood experiences	.015	.0578	-.099	.128	.065	1	.799
Relationship change	.277	.7000	-1.094	1.649	.157	1	.692
Satisfaction relationship	.533	.3957	-.243	1.308	1.812	1	.178
Effect on children	.385	.3289	-.260	1.029	1.370	1	.242
Difficulty re-establishing child relationship	.358	.3520	-.332	1.048	1.033	1	.309
Alcohol use	-.090	.1624	-.408	.229	.305	1	.581

Predictors <.4:

Table 288 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
24.376	8	.002

Table 289 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.040	.2892	-.527	.606	.019	1	.891
Service length	1.691	.4873	.736	2.646	12.037	1	.001
Individual augmentee vs formed unit	-.329	.2780	-.874	.215	1.405	1	.236
Rank	-.311	.3694	-1.035	.413	.707	1	.400
Relationship status	-1.654	1.3012	-4.204	.897	1.615	1	.204
Satisfaction relationship	.694	.2429	.218	1.170	8.163	1	.004
Effect on children	.289	.2993	-.298	.875	.929	1	.335
Difficulty re-establishing child relationship	.577	.3059	-.022	1.177	3.562	1	.059

Predictors <.1:

Table 290 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
17.177	4	.002

Table 291 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.007	.2904	-.576	.562	.001	1	.981
Service length	1.320	.3118	.709	1.931	17.926	1	.000
Satisfaction relationship	.731	.2437	.253	1.209	8.999	1	.003
Difficulty re-establishing child relationship	.781	.3064	.181	1.382	6.504	1	.011

All entered into logistic regression as <.05:

Difficulty re-establishing child relationship caused a quasi-complete separation in the data, therefore was removed from the model; the model however was not significant:

Table 292 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
3.527	3	.317

Table 293 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.084	.3761	-.821	.653	.050	1	.824	.920	.440	1.922
Service length	-.145	.5982	-1.318	1.027	.059	1	.808	.865	.268	2.793
Satisfaction relationship	1.052	.5434	-.013	2.117	3.749	1	.053	2.864	.987	8.308

6.6.9.8 GAD Follow up

Table 294 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)

GAD-7	58.971	16	.000

Table 295 Linear regression parameter Estimates

	GAD-7				
Parameter	B	Standard error	95% confidence interval		P value
			Lower	Upper	
Group number	-.124	.5530	-1.208	.960	**.823**
Rank (Junior vs. Senior)	.148	.6116	-1.051	1.347	**.809**
In a relationship (y/n)	-5.751	1.8978	-9.471	-2.032	**.002**
Age group (up to 24 years vs. older)	.245	1.0229	-1.760	2.250	**.811**
Short (1-4 years) vs. Long (5 years or more) service	.891	1.5644	-2.175	3.957	**.569**
Regular or Reserve	-.771	.9174	-2.570	1.027	**.400**
Individual Augmenters vs. Formed Unit	.653	.5501	-.425	1.731	**.235**
Number of tours	.183	.1198	-.052	.418	**.126**
Combat exposure scale score	-.094	.0543	-.201	.012	**.082**
Operational exposure score	.245	.3637	-.468	.957	**.501**
Relationship change since return home	.398	1.5719	-2.683	3.478	**.800**
How happy are you with relationship	1.611	.8230	-.002	3.224	**.050**
Deployment had effect on children	.439	.5299	-.600	1.478	**.407**
Difficulty re-establishing relationship with children	.914	.5689	-.201	2.029	**.108**
Adverse childhood experiences	.360	.1781	.011	.709	**.043**
AUDIT (alcohol) (Square root transformed)	**.541**	**.3281**	**-.102**	**1.184**	**.099**

Predictors <.4:

Table 296 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
53.521	9	.000

Table 297 Linear regression parameter Estimates

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	-.217	.5029	-1.202	.769	.185	1	.667
Relationship status	-2.496	1.6822	-5.793	.801	2.202	1	.138
Individual Augmenters vs. Formed Unit	.570	.5320	-.473	1.612	1.146	1	.284
Tours	.208	.0929	.026	.390	5.016	1	.025

Combat exposure	-.045	.0347	-.113	.023	1.649	1	.199
Spouse relationship satisfaction	1.862	.4772	.927	2.798	15.229	1	.000
Re-establishing child relationship difficulty	1.555	.5515	.474	2.636	7.947	1	.005
Q19CHEXPtot	.321	.1730	-.018	.660	3.451	1	.063
Alcohol total	.490	.2976	-.094	1.073	2.705	1	.100

Outliers removed and GAD-7 transformed:

Table 298 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
28.932	9	.001

Table 299 Linear regression parameter Estimates

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.048	.0687	-.086	.183	.491	1	.483
Relationship status	-.195	.1150	-.421	.030	2.886	1	.089
Individual Augmenters vs. Formed Unit	-.018	.0669	-.149	.113	.072	1	.789
Tours	.011	.0090	-.006	.029	1.582	1	.208
Combat exposure	-.001	.0080	-.017	.015	.010	1	.921
Spouse relationship satisfaction	.131	.0389	.054	.207	11.292	1	.001
Re-establishing child relationship difficulty	.183	.0659	.054	.312	7.699	1	.006
Aversive childhood experiences	.030	.0184	-.006	.066	2.668	1	.102
Alcohol use	.041	.0324	-.023	.104	1.577	1	.209

Predictor variables p<.1 included in linear regression:

Table 300 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
19.349	4	.001

Table 301 Linear regression parameter Estimates

Parameter			95% Wald Confidence Interval		Hypothesis Test		
	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.079	.0732	-.065	.222	1.162	1	.281
Relationship status	-.237	.1120	-.457	-.018	4.481	1	.034
Spouse relationship satisfaction	.129	.0455	.040	.218	8.050	1	.005
Difficulty reestablishing relations with child	.220	.0688	.085	.355	10.237	1	.001

Non-GLM logistic regression:

Table 302 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	127.498[a]	.127	.198

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 303 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	2.071	2	.355

Table 304 Model predictive power

	Observed		Predicted		
			GAD follow up		Percentage Correct
			.00	1.00	
Step 1	GAD follow up	.00	106	7	93.8
		1.00	21	9	30.0
	Overall Percentage				80.4

a. The cut value is .500

Table 305 Categorical Variables Codings

		Frequency	Parameter coding (1)
Spouse relationship satisfaction	.00	121	1.000
	1.00	22	.000
Re-establishing child relationship difficulty	.00	81	1.000
	1.00	62	.000
Relationship Recoded	Not in a Relationship	6	1.000
	In a Relationship	137	.000

Chi-Square run for relationship status variable as only 6 events and logistic re-run with only Spouse relationship satisfaction and Re-establishing child relationship difficulty as predictor variables:

Relationship status Chi-Square:

Table 306 Chi Square test

			Relationship Recoded		
			Not in a Relationship	In a Relationship	Total
GAD follow up	.00	Count	38	184	222
		% within GAD follow up	17.1%	82.9%	100.0%
		% within Relationship Recoded	84.4%	78.6%	79.6%
		% of Total	13.6%	65.9%	79.6%
	1.00	Count	7	50	57

	% within GAD follow up	12.3%	87.7%	100.0%
	% within Relationship Recoded	15.6%	21.4%	20.4%
	% of Total	2.5%	17.9%	20.4%
Total	Count	45	234	279
	% within GAD follow up	16.1%	83.9%	100.0%
	% within Relationship Recoded	100.0%	100.0%	100.0%
	% of Total	16.1%	83.9%	100.0%

Table 307 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.784[a]	1	.376		
Continuity Correction[b]	.467	1	.494		
Likelihood Ratio	.828	1	.363		
Fisher's Exact Test				.427	.252
Linear-by-Linear Association	.781	1	.377		
N of Valid Cases	279				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.19.
b. Computed only for a 2x2 table

Logistic regression with predictors of Relationship satisfaction and difficulty re-establishing child relationship only, parameter estimates and overall significance reported in main results:

Table 308 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	128.023[a]	.124	.193

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 309 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.144	2	.930

Table 310 Model predictive power

	Observed		Predicted		
			GAD follow up		Percentage Correct
			.00	1.00	
Step 1	GAD follow up	.00	111	2	98.2
		1.00	27	3	10.0
	Overall Percentage				79.7

a. The cut value is .500

6.6.9.9 PHQ-9Follow up

All predictors in linear regression model:

Table 311 Linear regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
PHQ-9	84.909	16	.000

Table 312 Linear regression parameter Estimates

	PHQ-9				
Parameter	B	Standard error	95% confidence interval		**P value**
			Lower	Upper	
Group number	.114	.4945	-.855	1.083	**.818**
Rank (Junior vs. Senior)	.592	.5655	-.516	1.700	**.295**
In a relationship (y/n)	-6.500	2.4345	-11.272	-1.729	**.008**
Age group (up to 24 years vs. older)	.304	1.0831	-1.819	2.427	**.779**
Short (1-4 years) vs. Long (5 years or more) service	1.007	1.6587	-2.244	4.258	**.544**
Regular or Reserve	-1.442	.6886	-2.792	-.092	**.036**
Individual Augmenters vs. Formed Unit	.304	.4711	-.619	1.227	**.519**
Number of tours	.408	.1890	.037	.778	**.031**
Combat exposure scale score	-.033	.0438	-.119	.053	**.452**
Operational exposure score	.101	.3504	-.586	.787	**.774**
Relationship change since return home	1.319	1.7030	-2.019	4.657	**.439**
How happy are you with relationship	1.037	.8906	-.709	2.782	**.244**
Deployment had effect on children	.685	.4791	-.254	1.624	**.153**
Difficulty re-establishing relationship with children	1.563	.4731	.635	2.490	**.001**
Adverse childhood experiences	.193	.1390	-.079	.465	**.165**
AUDIT (alcohol)	**.770**	**.3443**	**.095**	**1.445**	**.025**

Predictors <.4:

Table 313 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
79.895	10	.000

Table 314 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.358	.4471	-.518	1.235	.642	1	.423
Rank	.796	.5374	-.257	1.850	2.196	1	.138
Relationship status	-4.883	1.7913	-8.394	-1.372	7.432	1	.006
Regular or Reserve	-.796	.9052	-2.570	.978	.773	1	.379
Tours	.456	.1733	.116	.795	6.914	1	.009
Spouse relationship satisfaction	1.699	.4479	.821	2.577	14.384	1	.000
Effect on children	.591	.4718	-.333	1.516	1.571	1	.210
Re-establishing child relationship difficulty	1.724	.4780	.787	2.661	13.010	1	.000
Aversive childhood experiences	.172	.1387	-.100	.444	1.532	1	.216
Alcohol use	.707	.3129	.094	1.321	5.111	1	.024

Predictors <.1:

Table 315 Linear regression model test

Likelihood Ratio Chi-Square	df	Sig.
73.751	6	.000

Table 316 Linear regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
Group number	.439	.4690	-.480	1.358	.875	1	.349
Relationship status	-5.150	1.8021	-8.681	-1.618	8.166	1	.004
Tours	.510	.1874	.143	.878	7.416	1	.006
Spouse relationship satisfaction	1.579	.4527	.692	2.467	12.171	1	.000
Re-establishing child relationship difficulty	2.133	.5276	1.099	3.167	16.343	1	.000
Alcohol use	.771	.3102	.163	1.379	6.171	1	.013

All predictors p<.05 therefore all added to logistic regression model (apart from relationship status):

Table 317 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	121.862[a]	.181	.274

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 318 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4.115	8	.847

Table 319 Model predictive power

Observed			Predicted		
			PHQ follow up		Percentage Correct
			.00	1.00	
Step 1	PHQ follow up	.00	99	7	93.4
		1.00	20	12	37.5
	Overall Percentage				80.4

a. The cut value is .500

Chi Square tests:

Relationship status

Table 320 Chi Square test

			Relationship status		
			Not in a Relationship	In a Relationship	Total
PHQ follow up	.00	Count	36	176	212
		% within PHQ follow up	17.0%	83.0%	100.0%
		% within Relationship status	80.0%	75.2%	76.0%
		% of Total	12.9%	63.1%	76.0%
	1.00	Count	9	58	67
		% within PHQ follow up	13.4%	86.6%	100.0%
		% within Relationship status	20.0%	24.8%	24.0%
		% of Total	3.2%	20.8%	24.0%
Total		Count	45	234	279
		% within PHQ follow up	16.1%	83.9%	100.0%
		% within Relationship status	100.0%	100.0%	100.0%
		% of Total	16.1%	83.9%	100.0%

Table 321 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.474[a]	1	.491		
Continuity Correction[b]	.248	1	.619		
Likelihood Ratio	.490	1	.484		
Fisher's Exact Test				.571	.316
Linear-by-Linear Association	.472	1	.492		
N of Valid Cases	279				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.81.

b. Computed only for a 2x2 table

Satisfaction with spouse relationship

Table 322 Chi Square test

			Satisfaction with relationship		
			.00	1.00	Total
PHQ follow up	.00	Count	172	10	182
		% within PHQ follow up	94.5%	5.5%	100.0%
		% within Satisfaction with relationship	76.8%	52.6%	74.9%
		% of Total	70.8%	4.1%	74.9%
	1.00	Count	52	9	61
		% within PHQ follow up	85.2%	14.8%	100.0%
		% within Satisfaction with relationship	23.2%	47.4%	25.1%
		% of Total	21.4%	3.7%	25.1%
Total		Count	224	19	243
		% within PHQ follow up	92.2%	7.8%	100.0%
		% within Satisfaction with relationship	100.0%	100.0%	100.0%
		% of Total	92.2%	7.8%	100.0%

Table 323 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.435[a]	1	.020		
Continuity Correction[b]	4.226	1	.040		
Likelihood Ratio	4.806	1	.028		
Fisher's Exact Test				.028	.024
Linear-by-Linear Association	5.413	1	.020		
N of Valid Cases	243				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.77.
b. Computed only for a 2x2 table

Table 324 Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.150	.020
	Cramer's V	.150	.020
N of Valid Cases		243	

6.6.9.10 Sleep dissatisfaction follow up

Table 325 Logistic regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
Sleep satisfaction	17.847	16	.333

Table 326 Logistic regression parameter Estimates

	Sleep dissatisfaction (follow up)

Parameter	B	Std. Error	95% Wald Confidence Interval		Odds Ratio (95% Confidence Interval)	**Hypothesis Test**	
			Lower	Upper		Df	**Sig.**
Group number	-.699	.4732	-1.626	.228	INV 2.012 (.796-5.076)	1	**.140**
Rank (Junior vs. Senior)	1.059	.5510	-.021	2.139	2.884 (.979-8.492)	1	**.055**
In a relationship (y/n)	-.224	1.6346	-3.428	2.980	INV 1.25 (.051-31.25)	1	**.891**
Age group (up to 24 years vs. older)	-.552	.8280	-2.175	1.071	INV 1.736 (.343-8.772)	1	**.505**
Short (1-4 years) vs. Long (5 years or more) service	-.741	1.1556	-3.006	1.524	INV 2.096 (.218-20)	1	**.522**
Regular or Reserve	-.408	.9971	-2.362	1.547	INV 1.504 (.213-10.638)	1	**.683**
Individual Augmenters vs. Formed Unit	.001	.4592	-.899	.901	1.001 (.407-2.463)	1	**.998**
Number of tours	.030	.0988	-.163	.224	1.031 (.849-1.251)	1	**.758**
Combat exposure scale score	.018	.0363	-.053	.089	1.018 (.948-1.093)	1	**.623**
Operational exposure score	-.041	.2560	-.543	.461	INV 1.042 (.631-1.721)	1	**.873**
Relationship change since return home	-.334	.9141	-2.126	1.457	INV 1.397 (.233-8.403)	1	**.715**
How happy are you with relationship	.649	.5341	-.398	1.695	1.913 (.671-5.449)	1	**.225**
Deployment had effect on children	-.507	.5159	-1.518	.504	INV 1.661 (.604-4.566)	1	**.326**
Difficulty re-establishing relationship with children	1.421	.5277	.387	2.455	4.141 (1.472-11.649)	1	**.007**
Adverse childhood experiences	-.039	.0968	-.229	.151	INV 1.040 (.860-1.256)	1	**.687**
AUDIT (alcohol) transformed (Square root)	**.197**	**.2510**	**-.295**	**.689**	**1.217 (.744-1.991)**	**1**	**.433**

Predictors <.4:

Table 327 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
16.253	5	.006

Table 328 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval	Hypothesis Test	Exp(B)	95% Wald Confidence Interval for Exp(B)

			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.652	.4005	-1.437	.133	2.648	1	.104	.521	.238	1.143
Rank	.575	.4768	-.360	1.509	1.453	1	.228	1.777	.698	4.524
Relationship satisfaction	.521	.3539	-.172	1.215	2.171	1	.141	1.684	.842	3.371
Effect child	-.243	.4407	-1.107	.620	.305	1	.581	.784	.330	1.859
Difficulty re-establishing child relationship	1.252	.4171	.435	2.069	9.011	1	.003	3.497	1.544	7.920

Predictors<.1:

Table 329 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
13.637	2	.001

Table 330 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.689	.3914	-1.456	.078	3.098	1	.078	.502	.233	1.081
Difficulty re-establishing child relationship	1.162	.3872	.403	1.921	9.005	1	.003	3.196	1.496	6.826

Table 331 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	163.550[a]	.069	.099

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Table 332 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	0	.

Table 333 Model predictive power

	Observed		Predicted		
			Q30sleep_satREC		Percentage Correct
			.00	1.00	
Step 1	Q30sleep_satREC	.00	106	0	100.0
		1.00	41	0	.0
	Overall Percentage				72.1

Observed			Predicted		
			Q30sleep_satREC		Percentage Correct
			.00	1.00	
Step 1	Q30sleep_satREC	.00	106	0	100.0
		1.00	41	0	.0
	Overall Percentage				72.1

a. The cut value is .500

6.6.9.11 Sleep distress follow up

Table 334 Logistic regression model test

Measure	Likelihood ratio Chi-Square	df	Significance (p)
Sleep disturbance	17.815	16	.335

Table 335 Logistic regression parameter Estimates

	Sleep distress (follow up)						
Parameter	B	Std. Error	95% Wald Confidence Interval		Odds Ratio (95% Confidence Interval)	**Hypothesis Test**	
			Lower	Upper		Df	**Sig.**
Group number	-.397	1.2477	-2.842	2.049	INV 1.488 (.129-17.241)	1	**.750**
Rank (Junior vs. Senior)	1.080	1.5576	-1.973	4.133	2.944 (.139-62.343)	1	**.488**
In a relationship (y/n)	-2.042	2.0106	-5.982	1.899	INV 7.692 (.150-333.33)	1	**.310**
Age group (up to 24 years vs. older)	24.798	2.7917	19.327	30.270	5.885 (2.474-1.400)	1	**.000**
Short (1-4 years) vs. Long (5 years or more) service	14.346	2.7061	9.042	19.650	1699834.347 (8452.194-3.419)	1	**.000**
Regular or Reserve	-17.914	3.1294	-24.048	-11.781	.000 (.000-.000)	1	**.000**
Individual Augmenters vs. Formed Unit	-.527	.9149	-2.321	1.266	INV 1.695 (.282-10.204)	1	**.564**
Number of tours	-.079	.1967	-.465	.307	INV 1.082 (.736-1.592)	1	**.688**
Combat exposure scale score	-.066	.1093	-.280	.148	INV 1.068 (.862-1.323)	1	**.546**
Operational exposure score	-.548	.5965	-1.717	.621	INV 1.730 (.537-5.556)	1	**.358**
Relationship change since return home	5.280	2.3417	.690	9.869	196.321 (1.994-19328.447)	1	**.024**
How happy are you with relationship	-2.143	1.3525	-4.794	.508	INV 8.547 (.617-125)	1	**.113**
Deployment had	.479	1.2729	-2.016	2.974	1.615 (.133-	1	**.707**

effect on children					19.569)		
Difficulty re-establishing relationship with children	1.395	1.1181	-.797	3.586	4.035 (.451-36.106)	1	**.212**
Adverse childhood experiences	-.414	.2276	-.860	.033	INV 1.513 (.968-2.364)	1	**.069**
AUDIT (alcohol) transformed (Square root)	**.444**	**.6037**	**-.739**	**1.627**	**1.559 (.487-5.091)**	**1**	**.462**

Predictors <.4 and not causing quasi-complete separation in data added to next logistic:

Table 336 Logistic regression model test

Likelihood Ratio Chi-Square	df	Sig.
15.653	7	.028

Table 337 Logistic regression parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
Group number	-.054	.7799	-1.582	1.475	.005	1	.945	.948	.205	4.369
Difficulty re-establishing child relationship	2.809	1.4335	.000	5.619	3.840	1	.050	16.598	1.000	275.596
Relationship status	-.807	1.0250	-2.816	1.202	.620	1	.431	.446	.060	3.325
Operational exposure	-.538	.3979	-1.318	.242	1.829	1	.176	.584	.268	1.273
Relationship change	2.210	.9018	.442	3.977	6.005	1	.014	9.114	1.556	53.374
Satisfaction with relationship	-.451	.4805	-1.393	.490	.883	1	.347	.637	.248	1.633
Adverse childhood experiences	-.159	.1409	-.435	.118	1.266	1	.260	.853	.647	1.125

Predictors <.1:

Table 338 Non-GLM model summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	45.658[a]	.158	.285

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Table 339 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	1.239	2	.538

Table 340 Model predictive power

	Observed		Predicted		
			Q31sleep_distREC		Percentage Correct
			.00	1.00	
Step 1	Q31sleep_distREC	.00	62	0	100.0
		1.00	10	0	.0
	Overall Percentage				86.1

a. The cut value is .500

Service Related Project: Levels of Parental Satisfaction with the Lewisham Communications Clinic Report

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Abstract

Clinicians highlighted that formal feedback regarding a specialist Autistic spectrum disorder and social communication difficulties diagnostic assessment report was required in order to both inform local service and conform to local and national government and health service policies. A questionnaire was designed in collaboration with clinicians and parents of children who had been assessed within the clinic completed a parental satisfaction survey regarding their opinions of the report itself. Responses were largely positive but also included suggestions for altering future practice. The results of the survey were fed back to the clinical team and strategies for implementing parental feedback were developed.

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1 Introduction

1.1 Patient satisfaction: Government and national policy

The NHS has become increasingly engaged in obtaining the feedback of its' Service Users in service implementation and development to make its' service as informative and relevant to improve outcomes for the people who use it (Care Quality Commission (CQC), 2010a); CQC (2010b); DoH (2010). These publications highlight that service users need to be informed about their care options in order to be able to make informed decisions about the care that they wish to receive (CQC, 2010a).

The Health and Social Care Act (2001) cites the importance of consulting those for whom care is provided. The CQC (2010a) highlighted the importance of person centred care; one way to achieve this is by involving service users in the design and delivery of the services that they receive. Every Child Matters (ECM) highlighted the importance of feedback from children and their families when planning service provision (ECM, 2004a). ECM (2004b) stressed the need for better information sharing with families of children and to design the service to meet the needs of the children and their families, not the other way around. The importance of involving clients and other key figures e.g. parents, in service feedback and development is highlighted by the National Autistic Society (NAS) (2011).

1.2 Autistic Spectrum Disorders

The full diagnostic criteria for autism and Asperger syndrome can be found in Appendix I. There are two classification systems that can be used by health professionals in order to diagnose either condition; the *International Classification of Diseases and Related Health Problems (ICD –10)* (World Health Organisation (WHO), 2005) or the

Diagnostic and Statistical Manual of Mental Disorders (DSM- IV) (American Psychiatric Association (APA), 1994). The criteria common to both systems are the requirements for abnormal language development e.g. a delay or lack of spoken language; abnormal social development e.g. failure to use eye gaze or gesture to regulate interaction; restricted, rigid and repetitive patterns of behaviours or interests e.g. hand flapping; and an onset of symptoms before the age of 36 months (WHO, 2005; APA, 1994).

Autism is a highly heterogeneous condition. For instance, if the Autism is due to familial inheritance it presents differently from that associated with a spontaneous mutation. The latter is associated with superior IQ and excellent vocabulary abilities, while the former is associated with severe levels of impairment and very little, if any, speech (WHO, 2005; APA, 1994). The diagnosis of Asperger syndrome requires the same criteria for social-communication deficits to be met as with an Autism diagnosis. Asperger syndrome is associated with an IQ largely within the normal range with relatively normal early language developments (WHO, 2005; APA, 1994).

1.2.1 Diagnostic assessments

Because there are multiple criteria upon which to assess an individual, a number of standardised assessments have been developed in order to aid clinicians in making formal diagnoses.

1.2.1.1 Diagnosis within a specialist clinic

The National Institute for Health and Clinical Excellence (NICE) (2011); NAS (1999); and the National Autism Plan for Children (NAPC) (2003) cite the importance of a multi-agency assessment (MAA) drawing from information gathered in a variety of ways e.g. detailed parental interview, structured cognitive assessment, and mental health and behaviour assessments. To diagnose Autism the child can attend a half day, multidisciplinary assessment to assess his/her cognitive abilities, by using a standardised

assessment battery such as either the Wechsler Preschool and Primary Scale of Intelligence Third Edition (WPSSI-III) (Wechsler, 2002), or the Wechsler Intelligence Scale for Children Fourth Edition (WISC-IV) (Wechsler, 2003), dependent on the child's age at assessment. Both the WPSSI-III and WISC-IV are valid and reliable measures for general intellectual abilities. They provide information on a child's abilities in different areas which are thought to reflect different aspects of intelligence. The child can also be assessed on his/her communication skills by using an assessment such as the Leiter-R (Roid & Miller, 1998). Whilst completing the Leiter-R, the examiner is required to use nonverbal gestures to prompt a response for the child

Formal or structured play based assessments can also be used, such as the Autism Diagnostic Observation Schedule (ADOS) (Lord, et al., 1989; Lord, Rutter, & Le Couteur, 1994; Lord et al., 1996), as well as informal observations. At this assessment the parent/carer of the child can be interviewed to provide detailed information on developmental history and the child's current presentation. Giannoulis, Beresford, Davis, Baird, & Sclare (2004) used this format in their study outlining parental perceptions of a specialist neurodevelopmental diagnostic service.

1.2.1.2 Receiving a diagnosis

Giannoulis et al. (2004) found that when parents sought a diagnosis from a specialist assessment centre, they also valued advice and information about education and managing their child's behaviour. This research shows that a large amount of information is both required and desired within such reports. One of the goals for the clinical team is to present this information within an accessible, user friendly document.

Previous research has found that when a child is given a diagnosis of ASD, this can be both worrisome and troublesome (Hackett, Shaikh, & Theodosiou, 2009) and has a large emotional impact on the parent (Hasnat & Graves, 2000). Therefore the importance

of the provision of clear information at this time is paramount (Hackett et al., 2009). Previous research has shown that parents value the opportunity to ask questions as well as to be given information to take away with them e.g. Hilton et al. (2011); Giannoulis et al. (2004). A written summary page of the main findings at the start of the report was also implemented in the appropriate service following the Hackett et al. (2008) research.

1.2.1.3 Rates of diagnosis

The prevalence of childhood autism in a South Thames sample was shown to be between 24.8 per 10000 (when using a narrower definition) and 116.1 per 10000 (when using 'all ASD's' as a definition) (Baird et al., 2006). This suggests clinicians are working to increased demands on the diagnostic services in the context of a difficult economic climate when public service resources are currently stretched.

1.3 The Lewisham Communications Clinic

The Lewisham Communications Clinic is a clinic led by a Consultant Paediatrician for the purpose of diagnosing communication disorders in children, largely Autistic Spectrum Disorders (ASD). The clinic was set up roughly 15 years ago and between November 2010 – June 2011 approximately two children and their families were seen a week. During the period of data collection there was approximately a 12 month waiting list for assessment. It is important to note that since the data collection period this waiting list has now been reduced significantly and between five-to-ten children are seen each week. A Consultant Paediatrician is always present at the assessment and they are accompanied by another specialist health professional when appropriate. The child's communication and interaction skills are observed during a series of tasks.

The Communications Clinic provides a diagnostic service for all children in Lewisham and is staffed by clinicians from both the South London and Maudsley NHS Trust and the Lewisham Primary Care Trust (PCT).

The outcome of the diagnosis is most commonly fed back to the families in the clinic. However if the diagnosis is unclear then the clinicians would arrange the required additional assessments and the diagnosis would then be fed back at a later date. All families are offered a follow up appointment approximately six weeks after the initial clinic appointment to check up on the progress of the family and to provide further information. The follow up appointment is also attended by two representatives from the Lewisham Autism Support Group who both provide further information as well as matching families for social support and run larger support groups. At the initial clinic appointment, all families are given an information pack with details of local and national support groups or charities, e.g. the National Autistic Society.

After attending the initial Communications Clinic assessment, the child's parent/carer(s) receive a paper copy of the full report of the assessment findings. This report can be up to eight-to-ten pages long, thereby enclosing a large amount of information.

The Communications Clinic clinicians have historically utilised evaluation and consultation within the clinic to improve service user satisfaction. This includes a previous parental satisfaction survey completed by a Paediatrician working with the clinic as part of an MSc dissertation. This focused on the pre- and post- assessment satisfaction levels e.g. waiting time and ongoing support, as well as satisfaction with the report itself. This was completed roughly five years before the current survey.

1.4 Rationale for parental satisfaction survey

The Communications Clinic Paediatricians and their multidisciplinary colleagues highlighted that feedback had not been formally gathered from families regarding only the Communications Clinic report. The previous MSc research had been completed a number of years before, so clinicians were keen to have feedback around the current

parental view. As there are a number of stages involved in the assessment, from referral to diagnosis, it was deemed necessary to concentrate specifically on the report for the purposes of the current project.

1.5 Aims of current survey

The current survey aimed to identify parent's views about the Communication Clinic report to highlight areas of satisfaction to feed back to the service and also to highlight if there were any areas of the report that could be improved to better aid the understanding of the families receiving it.

2 Method

2.1 Design

A postal questionnaire was sent to all the parents of children who had been seen in the Communications Clinic in the two preceding years from the study start date of September 2010.

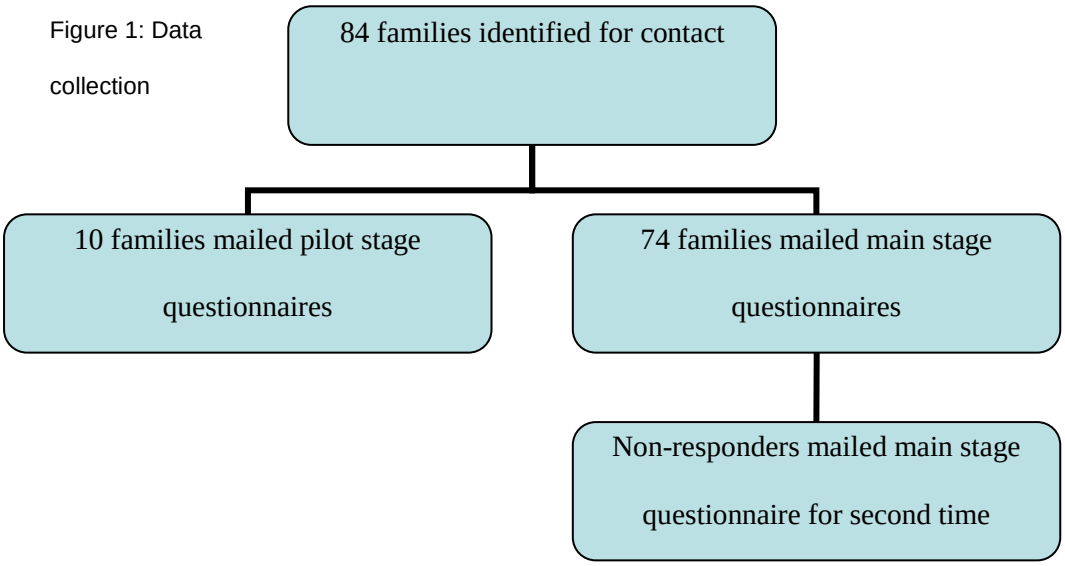
2.2 Questionnaire development

The questionnaire was developed using a two-level consultation period; firstly the Consultant Paediatricians for the Communications Clinic were asked to highlight the areas they wished to receive feedback on. A Paediatrician for the Communications Clinic, was then consulted to give further advice regarding questionnaire design due to completion of an MSc focusing on parental satisfaction levels with the clinic. Unfortunately the MSc was unavailable to view, so consultation was verbal only.

EB, with supervisor guidance, developed a draft of the questionnaire and circulated this to the Paediatricians involved. The responses from each were then incorporated into re-drafts until an agreed version was reached.

2.3 Procedure

Figure 1: Data collection



2.3.1 Pilot stage

The aim of the pilot stage was to gain feedback regarding the wording, layout and comprehension of the questionnaire items. The questionnaire was sent out to ten parents by EB. See Appendix II for the pilot stage information sheet. One response was received, detailing that the questionnaire was easy to understand and there were no suggestions for improvements. Given the thorough consultation and drafting process undergone in designing the questionnaire this response was deemed sufficient to progress to the main project stage.

2.3.2 Main study

The main study questionnaires were mailed by EB and included a consent form, questionnaire and pre-paid return envelope. See Appendix III for the main study information and consent form; and Appendix IV for the project questionnaire

To increase responses face-to-face recruitment at the follow up clinic appointment was used from February – June 2011. Parents were given the questionnaire, consent form and return envelope and asked to complete and return the questionnaire in

their own time. It was explained refusal to participate would not affect their child's ongoing care. During the period of data collection, there were, on average, two follow up clinics a week. This group were not given extra guidance, they received the same amount of information as the postal questionnaire participants.

Data collection from the follow up clinic was terminated in June 2011 as this phase had been conducted for seven months, therefore those who had wished to respond had had ample time to do so. No additional responses were received after this time, so no responses omitted from analyses.

2.3.3 Feedback to the service

EB attended a Communications Clinic Team meeting and fed back the results of the survey. The meeting was attended by seven Communications Clinic clinicians who gave their feedback on the results and recommendations were developed into workable strategies to be taken forward by the team (see section *4.0 Discussion* for further details). The team were also keen to feed back the results of the survey at a future meeting of the service user support group which is held at Kaleidoscope.

3 Results

3.1 Overview

3.1.1 Response rate

A total of 15 responses were received; 14 from the postal mail outs and one from the face to face recruitment. The overall response rate from the postal questionnaires was 18.92%. It is not possible to gauge the response rate of the face to face stage as it is not possible to exactly how many families were asked to participate in this stage.

3.1.2 Attendance date

All responders attended the assessment in 2010, apart from one who attended in 2009. However as 77 of the 84 families identified for contact attended in 2010, this weighting would be expected.

3.1.3 Consent

Three responders did not return consent forms, so were unidentifiable from the data they included on the questionnaire; implied consent was taken in these instances.

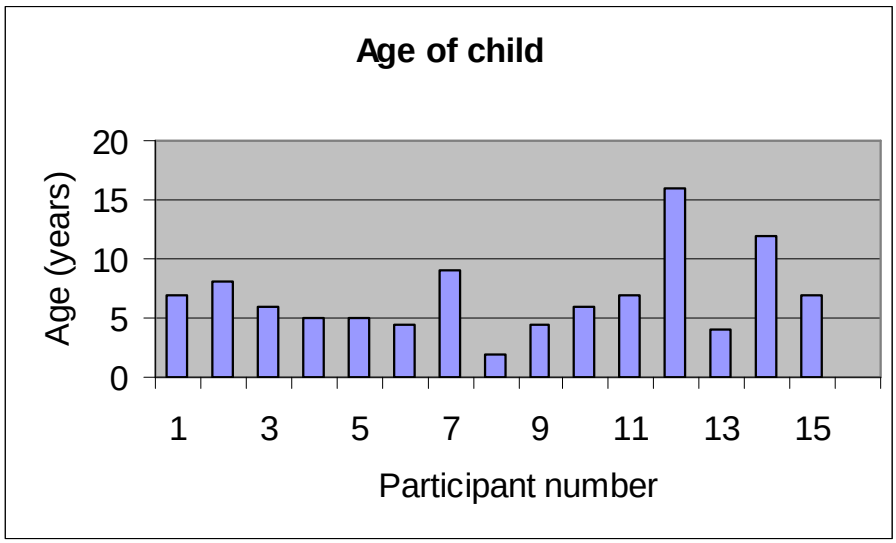
3.1.4 Questionnaire structure

The questionnaire has been broken into the following sections for presenting results: *demographics; language; structure; support; information pack; general comments.*

3.2 Demographics

3.2.1 Age

The ages of the participants' children ranged from two to 16 years (mean = 6.57 years).



3.2.2 Diagnosis

86.7% of the children had received a diagnosis of ASD at the Communications Clinic.

3.2.3 Education and SEN

Of the responses received, 92.3% of these children were in mainstream education, the remaining 7.7% attended a special school.

44.4% of participants' children had received a Statement of SEN. A further 44.4% were waiting to hear back about a Statement application and the remaining 11.1% had had their Statement application rejected. [5]

3.2.4 Background information

93.3% of responders either 'agreed' or 'strongly agreed' that the background information included in the report was correct. 100% of responders either 'agreed' or 'strongly agreed' that the family history included in the report was appropriate. A respondent added a qualitative comment however in the box provided regarding family history:

"It wasn't very comprehensive, I can think of much more relevant family traits"

Another respondent added that:

"I split up from 'X's' dad when 'X' was a baby, however every letter [from Kaleidoscope] is addressed to Miss 'Y' and 'Z (X's dad)…"

3.3 Language

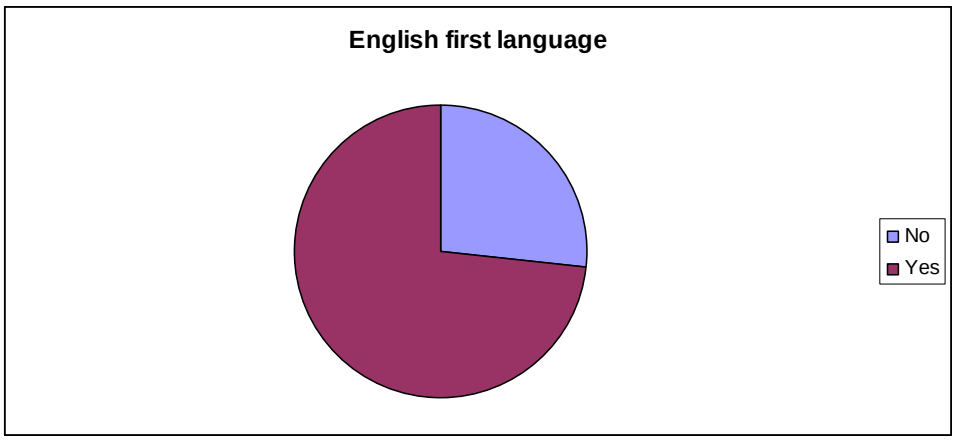
3.3.1 Overview

All of the responders reported that they did not find the language in the report too technical and no-one reported that they needed help reading the report.

1.A Statement of Special Educational Needs (SEN) results from an assessment conducted by the local authority whereby a child is deemed not to be making progress in school, or needs a lot of extra help. Each child's statement sets out the amount of support they need.

3.3.1.1 First language

73.3% of those who provided data reported English as their first language.



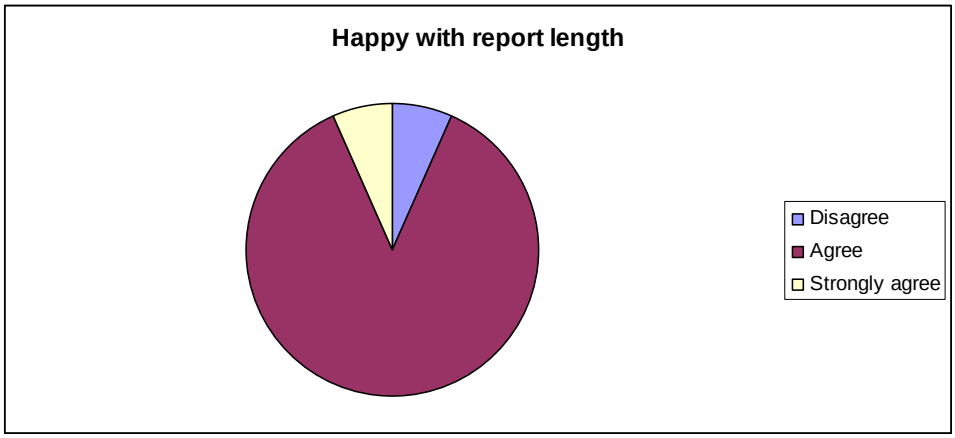
3.3.1.2 Translation

26.7% of respondents identified that English was not their first language. Of this subsection of the main sample, 33.2% said that they were not offered the opportunity for the report to be translated into their own language and 66.8% that they did not know whether they had been offered this service or not.

All participants responded to the question *'would you have liked the report to have been translated?'* 20% of respondents answered 'no', the remaining 80% of the sample answered 'not applicable'. 6.7% of the sample who had initially identified that their first language was not English responded 'not applicable' to this translation item.

3.4 Structure

3.4.1 Report length



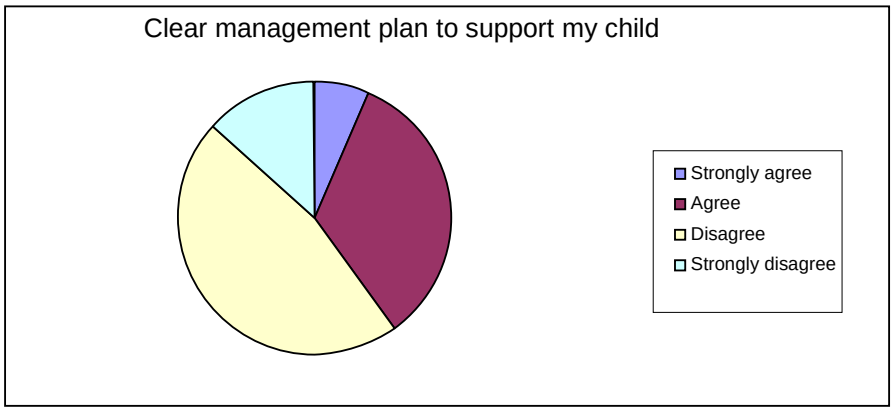
93.3% of respondents either ‘agreed’ or ‘strongly agreed’ with the statement “I was happy with the overall length of the report”. 6.7% of the respondents in the sample ‘disagreed’ with the statement. This participant provided qualitative feedback in the box provided:

“I was not happy reading the report, I was scared, depressed and [it] broke my heart knowing my child is not like any other normal child.”

3.4.2. Flow of report. Respondents were largely in agreement with the statements *“the subheadings were easy to understand”* and *“the different sections are easy to follow”* as 93.3% of the sample either ‘agreed’ or ‘strongly agreed’.

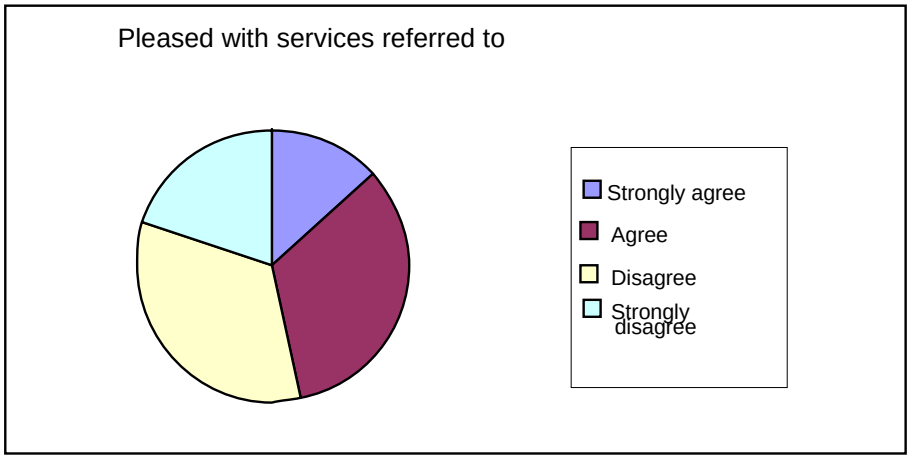
3.5 Support

3.5.1 Management plan



When parents were asked to rate whether they agreed that *“there was a clear plan to support my child”* in the report, the majority of respondents highlighted that they were not clear on this as 46.7% of the sample ‘disagreed’ and 13.3% ‘strongly disagreed’ with the statement. One parent added a comment: *“[The report] could have a plan for the carer so she/he could have an idea how to deal with the child better.”*

3.5.2 Referral to services



53.3% of the sample were not satisfied with the services they were referred to as 33.3% of respondents to this question 'disagreed' with the statement and 20% 'strongly disagreed' with the statement *"I was pleased with the services referred to"*.

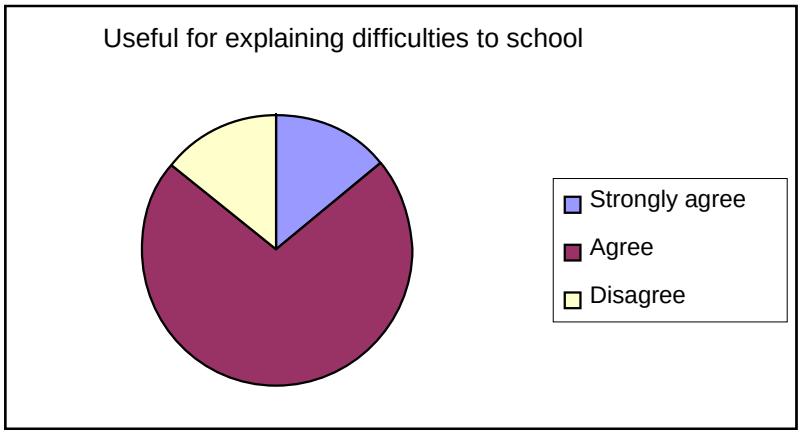
A number of qualitative responses were given in the box provided with this question:

"I felt a bit lost. I was given an information pack and everything has/is working out ok-ish but I feel that's because I'm resourceful rather than because the system works"

"Since my son's diagnosis no support has been given even when I requested support. [I] had to ring constantly to talk to a doctor, no 8 week follow up appointment arranged"

Another parent added that they felt they were *"left to get on with it"*.

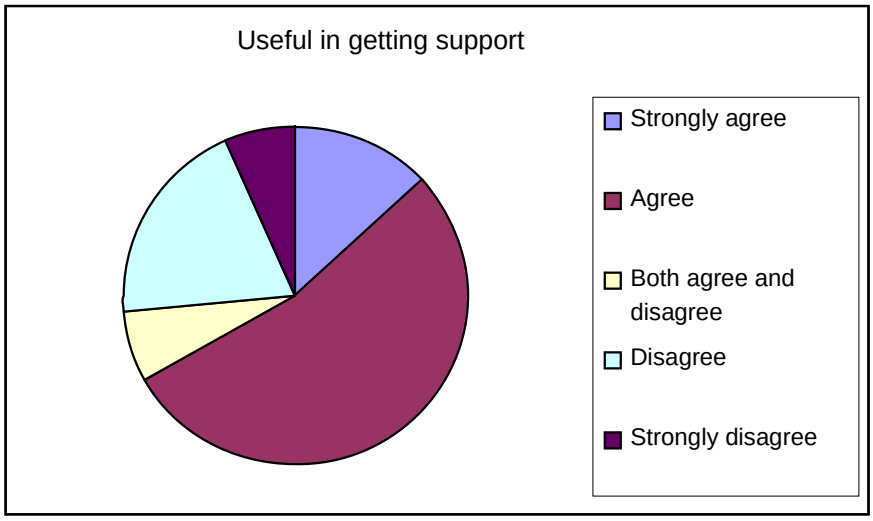
3.5.3 Communication with schools



Respondents largely answered that they had found the report useful in explaining their child's difficulties to their school, as 71.4% of the sample 'agreed' and 14.3% 'strongly agreed' that the report had been useful. However, 14.3% of the sample reported that they 'disagreed' with the statement.

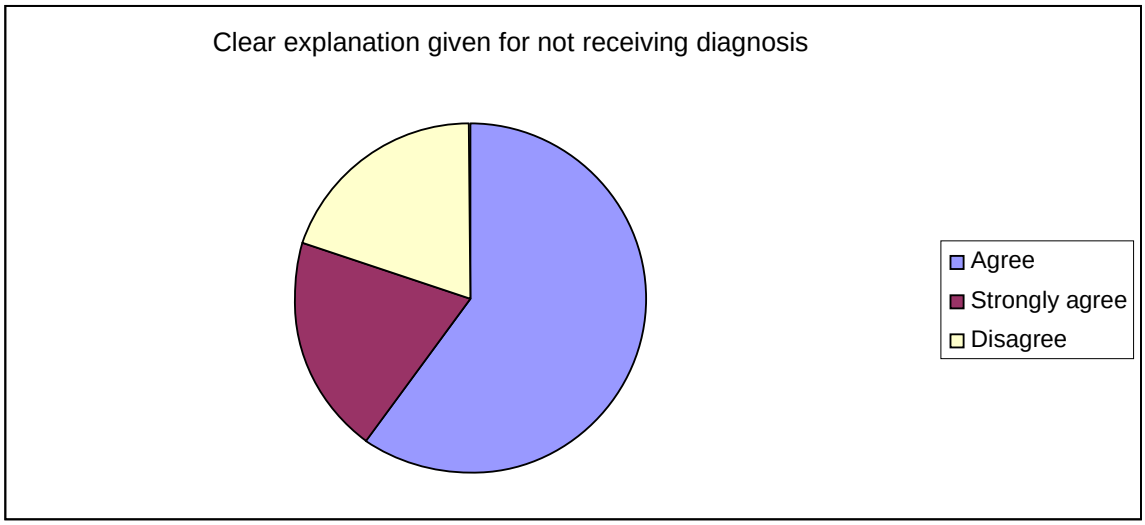
3.5.4 Gaining support

When asked if respondents had found the report useful in getting support, 13.3% 'strongly agreed', 53.3% 'agreed'. 6.7% of respondents 'both agreed and disagreed' with this statement. 26.7% either 'disagreed' or 'strongly disagreed' with the statement, so conveyed that they had not found the report useful in gaining support.



3.6 Diagnosis

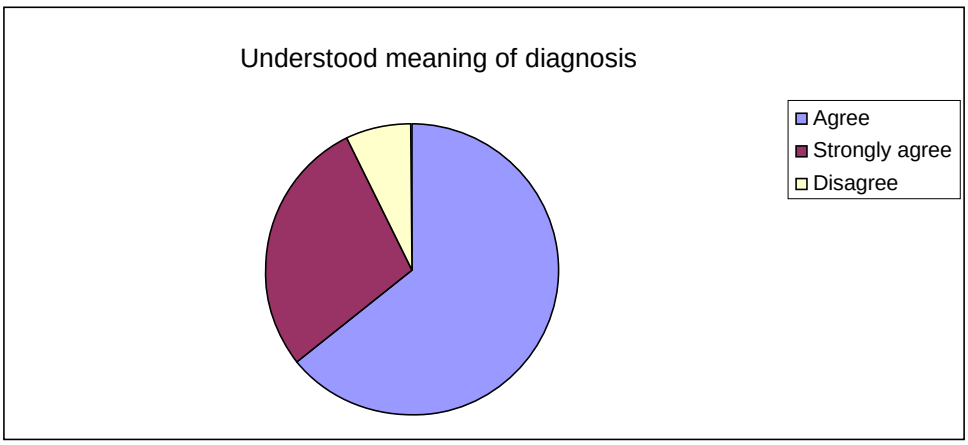
3.6.1 Communication of diagnosis



The 33.3% of the sample whose child *did not* receive a diagnosis were asked to rate if the report gave them a clear explanation for this decision. Of this subsection, 59.9% 'agreed'; 20.1% 'strongly agreed'; and 20.1% 'disagreed', this is represented in the graph above.

3.6.2 Meaning of diagnosis in relation to difficulties

Respondents were asked whether the meaning of the diagnosis (if applicable) in relation to their child's difficulties had been clearly outlined in the report. 64.5% 'agreed' and 28.8% 'strongly agreed' that this was the case. There was however 6.7% of respondents who 'disagreed' with this.



3.7 Information pack

3.7.1 Receipt of pack

An information pack is due to be included with the clinic report, however 40% of the respondents said that they did not receive this pack. The 60% who received the pack all reported that they found it useful.

3.7.2 Usefulness of pack

Respondents provided qualitative feedback about what they found useful, or not useful about the pack. Comments were both positive and constructive. Examples include:

"It provided contacts for other support and help and advised what benefits I could be eligible for."

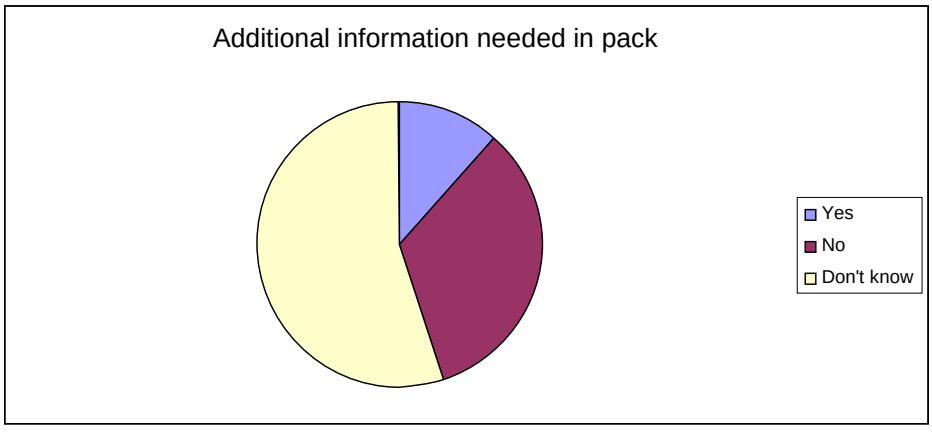
"It showed you different centres you can go [to] and how to deal with and cope with [the] situation."

Two respondents provided practical feedback regarding change:

"It should be broken down to help people take advantage of what is on offer. It is a lot to take in on top of trying to cope with your child's condition."

"It took me some time to work out what was relevant and which terminology referred to my son." This participant suggested that *"a glossary of terms"* would be useful to include with the pack.

3.7.3 Additional information in pack



Of the 60% who received the information pack, 6.7% reported that they would have liked additional information to be included in the pack (see reference to inclusion of glossary, in *3.7.2*). 33.3% answered that they 'did not know' whether they would like more information to be included or not. The remaining 20% responded that they did not want any more information to be included in the information pack.

3.8 General comments

3.8.1 Child's strengths and difficulties

All respondents indicated that they 'agreed' (92.9%) or 'strongly agreed' (7.1%) that the report accurately reflected their child's strengths and difficulties.

3.8.2 Distribution list

80% of respondents 'agreed' and 20% 'strongly agreed' that they were happy with the distribution list included at the end of the report.

3.8.3 Accuracy of report

All respondents either 'agreed' (85.7%) or 'strongly agreed' (14.3%) with the statement that "overall the information included in the report had been accurate".

3.8.4 Best feature of report and suggested improvement

Parents were finally asked to provide a qualitative description of what they had considered to be the best feature of the report and what would be a useful improvement to make.

Examples of responses regarding the best feature are:

"Description of observed social interactions"

"I found the whole report well done, I thought it was clear in its content and accurate. I found the plan useful even though I had to chase a couple of things at the follow up appointment"

"…the way the report is broken down in to categories is very helpful."

Examples of suggested improvements are:

"I think if the report summarised how well he was developing, [it] would be useful."

"More investigation in to family talents/difficulties although I didn't think about the relevant traits until some time after the appointment."

"It could have a plan for the carer so she/he could have an idea how to deal with the child better."

4 Discussion

4.1 Overview

4.1.1 Importance of service user feedback

The current study provided a generally positive view of the Communications Clinic report. It is important for service users to feel empowered to create change and to provide feedback to clinicians and other service providers. This has been shown by a wealth of research and policy documents, cited throughout this study, to be beneficial at both individual and service level. The survey gave parents an opportunity to voice their opinions and for clinicians to hear feedback about the service. There were a number of areas highlighted however that can be a focus of future service development.

4.1.2 Context of current study

As outlined in section *1.2.1.3.* the rates of ASD diagnoses have increased and demand for diagnostic services are high. In the context of a difficult economic climate, resources are stretched. At the time of data collection, the waiting list for the Clinic was significantly longer than at present; respondents to the current survey had noted that they were dissatisfied with the waiting time, which has now been reduced significantly to almost no waiting list.

4.1.3 Feedback of survey responses to clinical team

EB presented the results of the current survey to the Communications Clinic team. The feedback and agreed changes from the team as well as general suggestions for future practice/surveys are included within each individual section of the *discussion*.

4.2 Data analyses

4.2.1 Tests used

Descriptive statistics and frequency calculations were completed due to the generation of categorical data and the number of participants involved in the project. These analyses provided percentages, thereby allowing comparison of opinions generated from the Likert scale questionnaire items.

4.2.1.1 Future survey analyses

With a larger sample size, it may prove informative to run T-tests to compare different groups' responses, e.g. those whose child did receive a diagnosis compared to those who did not; comparing ethnicities; recency of attendance.

4.3 Response rate

The response rate for the survey was low, as it was below one fifth of the total number of those contacted, which impacted the potential range of responses that could have been received. This could be due to the nature of postal surveys and/or the timing of the questionnaire mail out. Response rate may have been reduced given that the time of year that parents/carers received the questionnaires was particularly busy for them. For example, the second mail out was sent out in November, at which time families may have been busy preparing for the end of the school term and the upcoming Christmas holidays. It was decided however to send this second stage out at this time to maintain momentum from the previous round of mail outs and to give parents as much time as possible to respond to the survey before the cut off date.

4.3.1 Improving future response rates

If this study was to be repeated, it may prove beneficial for the questionnaires to be mailed after the beginning of a school term, when parents may have a slightly more time to complete the questionnaires. There are arguably a great deal of pressures on the parents of children within this client group and so to send out the questionnaires at a potentially quieter time of year may have helped to increase responding.

Face to face recruitment may help increase response rates, if the parent is asked to complete the questionnaire in the building after their follow up appointment for instance. At the feedback of results to the team, they suggested making the clinic 15 minutes longer as routine, with the final 15 minutes dedicated to completion of feedback questionnaire/semi structured interview. This would also help to highlight if parents need additional support regarding translation or literacy.

4.4 Demographics

4.4.1 Education and Statement of SEN

There was a wide range of ages included in the sample, with the mean age of children being in primary education, and in school for two-to-three years. The vast majority of children who attended the clinic both received a diagnosis of ASD and were in mainstream education. There was a discrepancy between this number and those who had received a Statement of SEN (just under half of the sample). Qualitative feedback on a selection of the questionnaires reflected that applying for and receiving a SEN was an area of great concern for parents. Although this is not linked to evaluation of the clinic report itself, this suggests greater support or more information to be provided from the Local Authority around parental experiences and expectations, which the parents may benefit from.

4.4.2 Family background

Almost all of the respondents agreed that the family background and history included in the report was accurate and all respondents reported that the information was accurate. There was one respondent who reported that this was not the case however. This suggests that on the whole, the assessment process and recording of information is accurate and clinicians are accessing a detailed background to each child.

4.4.2.1 Future practice

At the feedback presentation to the clinical team, a Paediatrician commented that a checklist was historically used within the clinic and the team would ensure that this is being referred to to ensure information such as contact details are checked as up to date.

4.5 Language.

4.5.1 First language

Parents were asked if their first language was English and if there were any difficulties that they experienced whilst reading the report. No respondents reported that they either needed help reading the report, or had any difficulty understanding the terms used within the report. This shows that although the report contains a lot of detail, it was presented in user-friendly language. Specific ethnicity data was not gathered for the current study as the aim was to receive parental opinion regarding the report specifically.

4.5.2 Translation

No respondents in the current survey who identified that their first language was not English said that they would have liked the report to have been translated. The sample was self selecting however, so it could be argued that parents with literacy difficulties may not have been able to read the postal questionnaire *or* clinic report.

4.5.2.1 Future practice

Discussing the results of the assessment thoroughly with parents may help to highlight any literacy/language difficulties and offer translation of the report should this be deemed necessary on a case by case basis.

One parent suggested the inclusion of a glossary with the information pack, which would also be useful to refer to in conjunction with the report itself.

4.5.3 Reading the report

All respondents reported that they did not need help in reading the report and that the language used was easy to understand. It must also be considered that if a parent experienced difficulty reading a report, they may also have experienced difficulty reading and completing the questionnaire. Inclusion of individuals with literacy difficulties in future research is discussed in sections *4.5.2 Translation* and *4.3.1. Improving future response rates*.

4.6 Structure

4.6.1 Report length

The majority of parents within the sample were happy with the overall length of the report. One respondent reported that they were unhappy with the report length, subheadings and sections. This highlights individual differences in satisfaction levels and should be taken in to account by clinicians.

4.6.2 Subheadings and sections

The majority of respondents found the report easy to follow and that the subheadings were easy to understand. This suggests that although there is a lot of information included in the report, it is broken down in to sections which are clearly labelled.

4.6.2.1 Future surveys

Questions regarding structure could be extended, such as by inclusion of a qualitative response box specific to this area, or by inclusion of more negatively phrased questions such as 'the report was too long' to see if different responses are provoked.

4.7 Management plan and ongoing support

4.7.1 Gaining support

Just over half of respondents had found the report useful in gaining extra support for their child. It may be useful for subsequent satisfaction audits to assess what specific areas of support service users are satisfied or dissatisfied with e.g. whether there is a difference between health or education or social services. This may help highlight whether any more can be done by diagnostic services to help signpost to relevant agencies or support groups.

4.7.2 Clear management plan

The majority of respondents highlighted that they were not clear on the ongoing management or support plan that had been created for their child and added that this plan was not clear in the report.

4.7.3 Timeline of support

At the presentation of the survey results to the clinical team, they highlighted that the assessment (and subsequent report) are the initial stages of professional involvement and support. Therefore it was hypothesised that respondents to the study were not yet aware of available support as preliminary assessments were still due to take place. After clinicians have carried out the necessary assessments they would then advise on a management plan for parents. That is, the management plan resulting from the Communications Clinic report may be more of a clinician focused plan in terms of

completion of further assessments e.g. blood tests, and a parental management plan would follow after full assessment conclusion.

4.7.4 Referrals to other services

Over half of those who responded reported that they were not happy with the services that their child had been referred to as a result of the Communications Clinic assessment. As this is already a stressful time (e.g. Hasnat & Graves (2000); Hackett et al., (2009); NAS (2011)), the provision of extra support to families at this time must be prioritised.

4.7.4.1 Current clinical practice

Since the data collection period, two representatives from Lewisham Autism Support group attend each follow up appointment in addition to clinicians to discuss with the parents what support is available within their local area. This also enables parents to be linked in with other families and support groups.

4.7.5 Future practice

A separate summary page of the report may help address areas of dissatisfaction regarding management plan. Highlighting the main areas of support or change resulting from the assessment may prove useful for parents to refer back to. Hasnat & Graves (2000) and Hackett et al. (2008) highlighted that if parents are experiencing anxiety upon hearing the diagnosis, their ability to digest all of the information may be impacted. Therefore a separate summary could help ensure recipients are processing the main messages regarding outcome. Hackett et al. (2009) suggested a similar strategy, through inclusion of an initial outcome page to the report.

4.8 Diagnosis

4.8.1 Communication of diagnosis

13.3% of responder's children did not receive a diagnosis, the majority of this subsection responded that this had been explained clearly within the report. This has the benefit of aiding understanding over time, as parents may not have absorbed all the information that they were being told at the clinic appointment e.g. Hackett et al. (2009). If the report contains clear explanations regarding the decision making process this can act as a useful resource for parents, for example, when dealing with Local Authorities and schools.

4.8.1.1 Future practice

Although the majority of the sample responded that they had understood the diagnosis, there was still a proportion who reported that they did not understand it. Therefore additional modes of information may be beneficial, for example Hilton et al. (2011) suggested giving parents the opportunity to watch a video about their child's condition after receiving the diagnosis. This may help cater for varying language/literacy abilities and knowledge about the condition within the service user population.

4.8.2 Meaning of diagnosis in relation to child's difficulties

93.3% of respondents either 'agreed' or 'strongly agreed' that the report enabled them to understand the meaning of their child's diagnosis (or no diagnosis) in relation to their child's difficulties.

4.8.3 Explaining difficulties to school

The majority of the sample reported that they had not found the report useful in explaining their child's difficulties to school. The changes previously discussed may help to increase this. A clear outline of the key points may facilitate explanation to the child's school and other relevant agencies.

4.9 Information pack

4.9.1 Receipt of pack

Just over half of respondents responded that they received an information pack.

4.9.1.1 Future practice

Reinstating routine use of the checklist highlighted in *4.4.3.* would help to ensure that an information pack is included with each report. A discussion of the types of information in the pack would also give any parents who require assistance in reading the materials the chance to highlight this and therefore be directed to more suitable, translated information for instance. The need for consideration of the families' culture and prior learning levels was also highlighted by Hackett et al. (2009).

4.9.2 Satisfaction with pack

Of those who received it, all were happy with the information included within the information pack. Respondents reported that they found the provision of further information and contacts useful.

4.9.3 Additional information in pack

When asked whether they would have liked more information to have been included, answers were largely spread between not wanting additional information and not being sure if they wanted to receive additional information or not.

Parents may vary in the amount of information they wish to receive both at assessment and in the coming months, as previously discussed, attending the assessment can be a highly emotional time and all individuals will have varying thresholds when digesting information. Therefore clinical judgement can be applied as to what is appropriate, so as not to overload the families attending the clinic. Due to a parent detailing that they felt slightly 'overwhelmed' by receiving lots of information, it may be

more to ask appropriate if they wish to receive more information at their follow up or subsequent health appointments (Hasnat & Graves, 2000); (Hackett et al., 2009).

4.9.4 Future alterations to the pack

One parent fed back that it was hard to decide what was relevant to them within the information pack, he/she suggested that the pack be split up in to different sections. This would help enable quicker access to specific information. At the feedback session to clinicians, it was noted that the pack was already split up in to sections, a Paediatrician suggested that the team could include a contents page within the information pack so parents can more quickly find the information they require.

Adding a glossary of terms was suggested by a parent (also referenced in *4.5.2.1)* as they found some of the terminology used within the information in the pack hard to understand. This resource could then be generalised to the information pack, report and in future contact with autism services.

4.10 General comments

4.10.1 Distribution list

All respondents reported that they were happy with the distribution list included at the end of the report. This suggests good communication within the clinic between parents and the multi disciplinary team as to who the parent does and does not feel comfortable with being included in the distribution list.

4.10.2 Strengths and difficulties of the child

The respondents all agreed that the report accurately reflected their child's strengths and difficulties.

4.10.3 Accuracy of information

All respondents reported that, overall, the information contained in the report had been accurate.

5 Conclusion

5.1 Overview

The responses show that survey participants found the report to be accurate, tailored to their child and related their real-life difficulties to a clinical diagnosis when applicable. The report has also been shown to have everyday utility to the families who have received it, as the majority of respondents had found the report useful in explaining their child's difficulties to their school for instance.

5.2 Clinician response to service user feedback

The Communications Clinic clinicians reported at the feedback session with EB that they had found it very useful to receive formal feedback from the parents they had seen in the clinic. They appreciated receiving the positive feedback as well as encouraging discussion and implementation of respondents' suggested alterations.

5.3 Changes to the report in response to feedback

The clinicians agreed with the service user feedback and reported that the introduction of a glossary of technical terms will be included with the report and can therefore be used with the information pack as well. They also agreed that a separate summary page at the beginning of the report would help to highlight key points and aid parental communication with other agencies as a result. They agreed that a contents page for the information booklet would help parents to find the information that they required within the pack. The team were also in agreement that assessment clinicians should be reminded to use the checklist as a matter of routine to check all parents receive an information pack and contact details are up to date.

5.4 Methodological considerations

Stallard (1995) reported that postal questionnaires had a tendency to be biased towards positive responders. It is possible that this factor may have contributed to the

positive nature of the responses received in the current project. A number of dissatisfied responses were received however, thereby showing a range of viewpoints. Variance in responses was also found by Hackett et al. (2009) who identified the inherent difficulties in providing a report that is agreeable to all who receive it.

5.4.1 Future feedback

Gaining routine service user feedback could help to ensure that a range of views are heard from a larger group of respondents. Feedback could be generated via both postal or clinic based questionnaires, semi-structured interviews or a focus group. Gaining more qualitative reposes would enable certain areas, such as satisfaction with support, to be investigated more to highlighted exactly which areas parents are dissatisfied or satisfied with and better enable clinicians to provide or signpost to such support. 13 of the 15 respondents in the current survey provided qualitative comments, so this suggests respondents are willing to provide such data.

It has been argued that qualitative methods help to identify service users' dissatisfaction in contrast to quantitative methods confirming existing practice (Calnan, 1988; Lebow, 1982; Locker & Dunt, 1978; Stallard, 1996). Stallard (1996) for instance, argued that by using open ended questions, individuals are encouraged to produce more critical responses, which can help change and shape services to better meet the needs of those who use it.

The Communications Clinic clinicians were in agreement that they would implement routine service user feedback opportunities and suggested increasing appointments by approximately 15 minutes to enable a parent to complete a questionnaire fir instance at the end of their appointment. The details of this they agreed to take forward as a clinic as another service development opportunity.

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7 Appendices

7.1 Appendix I

Diagnostic criteria for autism and Asperger syndrome

Diagnostic criteria for autism from the two main diagnostic classification systems, the International Classification of Diseases and Related Health Problems (ICD) and the Diagnostic and Statistical Manual of Mental Disorders (DSM)

Autism: ICD-10.

Taken from the *International Classification of Diseases and Related Health Problems (ICD –10)* (World Health Organisation, 1992)

(a) Qualitative impairment in reciprocal social interaction, three from the following five areas:

- failure to use eye gaze, body posture, facial expression and gesture to regulate interaction adequately;
- a failure to develop (in a manner appropriate to mental age, and despite ample opportunity) peer relationships that involve a mutual sharing of interests, activities and emotions
- rarely seeking and using other people for comfort and affection at times of stress or distress and/or offering comfort and affection to others when they are showing distress or unhappiness;
- a lack of shared enjoyment in terms of vicarious pleasures in other people's happiness and/or a spontaneous seeking to share their own enjoyment through joint involvement with others;
- a lack of socio-emotional reciprocity, as shown by an impaired or deviant response to communicative behaviours;

(b) Qualitative impairments in communication, two from the following five areas

- a delay in, or total lack of, spoken language that is not accompanied by an attempt to compensate through the use of gesture or mime as alternative modes of communication;
- a relative failure to initiate or sustain conversational interchange (at whatever level of language skills is present) in which there is a reciprocal to and fro responsiveness to the communication of the other person;
- stereotyped and repetitive use of language and/or idiosyncratic use of words or phrases
- abnormalities of pitch, stress, rate. rhythm and intonation of speech;
- a lack of varied spontaneous make-believe play, or when young, social imitative play.

(c) Restricted repetitive and stereotyped patterns of behaviour, interests and activities, two from the following six areas

- an encompassing preoccupation with stereotyped and restricted patterns of interest
- specific attachments to unusual objects;
- apparently compulsive adherence to specific, non-functional routines and rituals;
- stereotyped and repetitive motor mannerisms that involve either hand/finger flapping or twisting or complex whole body movements;
- preoccupation with part-objects or non-functional elements of play materials (such as odour, the feel of their surface, or the noise/vibration that they generate);
- distress over changes in small, non-functional details of their environment.

(d) Developmental abnormalities must be present in the first three years for the diagnosis to be made

(e) Clinical picture is not attributable to other varieties of pervasive developmental disorder, specific developmental disorders of receptive language with secondary socio-emotional problems; reactive attachment disorder or disinhibited attachment disorder, mental retardation with some associated emotional/ behavioural disorder, schizophrenia of unusually early onset; and Rett syndrome.

Autism: DSM-IV.

Taken from *Diagnostic and Statistical Manual of Mental Disorders (DSM- IV)* (American Psychiatric Association, 1994)

(a) A total of six (or more) items from (1), (2) and (3), with at least two from (1), and one each from (2) and (3).

(1) Qualitative impairment in social interaction, as manifested by at least two of the following:

- marked impairment in the use of multiple non-verbal behaviors such as eye to eye gaze, facial expression, body postures and gestures to regulate social interaction;
- failure to develop peer relationships appropriate to developmental level;
- lack of spontaneous seeking to share enjoyment, interests or achievements with other people (e.g. by lack of showing, bringing, or pointing out objects of interest);
- a lack of social or emotional reciprocity;

(2) Qualitative impairments in communication as manifested by at least one of the following:

- delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime);
- in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others;
- stereotyped and repetitive use of language;
- lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level;

(3) Restricted, repetitive and stereotyped patterns of behaviour, interests and activities, as manifested by at least one of the following:

- encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus;
- apparently inflexible adherence to specific, non-functional routines or rituals;
- stereotyped and repetitive motor mannerisms (e.g. hand or finger flapping or twisting, or complex whole body movements);
- persistent preoccupation with parts of objects;

(b) Delays or abnormal functioning in at least one of the following areas (with onset prior to 3 years of age)

- social interaction;
- language as used in social communication;
- symbolic or imaginative play.

(c) *The disturbance is not better accounted for by Rett disorder or Childhood Disintegrative disorder.*

Asperger: ICD-10.

Asperger syndrome definition from the *International Classification of Diseases and Related Health problems – 10th Edition* (ICD-10). A disorder of uncertain nosological validity, characterized by the same kind of qualitative abnormalities of reciprocal social interaction that typify autism, together with a restricted, stereotyped repetitive repertoire of interests and activities. The disorder differs from autism primarily in that there is no general delay or retardation in language or cognitive development. Most individuals are of normal intelligence but it is common for them to be markedly clumsy; the condition occurs predominantly in boys (in a ratio of about eight boys to one girl). It seems highly likely that at least some cases represent mild varieties of autism, but it is uncertain whether or not that is so for all. There is a strong tendency for abnormalities to persist into adolescence and adult life and it seems that they represent individual characteristics that are not greatly affected by environmental influences. Psychotic episodes occasionally occur in early adult life.

Diagnosis is based on the combination of a lack of any clinically significant general delay in language or cognitive development plus, as with autism, the presence of qualitative deficiencies in restricted, repetitive, stereotyped patterns of behaviour, interests, and activities.

There may or not be problems in communication similar to those associated with autism, but significant language retardation would rule out the diagnosis.

Asperger: DSM-IV.

Diagnostic criteria for Asperger syndrome taken from DSM-IV

(a) There is no clinically significant general delay in spoken or receptive language or cognitive development. Diagnosis requires that single words should have developed by 2 years of age or earlier and that communicative phrases be used by 3 years of age or

earlier. Self-help skills, adaptive behaviour and curiosity about the environment during the first 3 years should be at a level consistent with normal intellectual development.

However, motor milestones may be somewhat delayed and motor clumsiness is usual (although not a necessary diagnostic feature). Isolated special skills, often related to abnormal preoccupations, are common, but are not required for diagnosis.

(b) There are qualitative abnormalities in reciprocal social interaction (criteria as for autism).

(c) The individual exhibits an unusual intense, circumscribed interest of restricted, repetitive and stereotyped patterns of behaviour interests and activities (criteria as for autism; however, it would be less usual for these to include either motor mannerisms or preoccupations with part-objects or non-functional elements of play materials).

(d) The disorder is not attributable to other varieties of pervasive developmental disorder; simple schizophrenia schizotypal disorder; obsessive-compulsive disorder; anakastic personality disorder; reactive and disinhibited attachment disorders of childhood.

7.2 Appendix II

Pilot Stage Information Sheet and Consent Form

South London and Maudsley NHS
NHS Foundation Trust

Addiction Sciences Building
4 Windsor Walk
Institute of Psychiatry
Denmark Hill
SE5 8AF
Telephone 0207 848 0733

Institute of Psychiatry
at The Maudsley

KING'S College LONDON
University of London

30th September 2010

Dear Sir/Madam,

I am a Trainee Clinical Psychologist working with Kitty Kwan (Principal Clinical Psychologist, and Manager of the Neurodevelopmental Team, Kaleidoscope) and in consultation with Dr Morgan and Dr O'Sullivan, based at the Kaleidoscope Centre for Children and Young People.

It has been highlighted by Dr's Morgan and O'Sullivan that a review of parental satisfaction with the Communication Clinic report would be very valuable in making sure a high standard of clinical care is achieved through the clinic. We are hoping to uncover ways we can revise the report to make the information included in it more accessible and understandable.

To achieve this, I am conducting a postal questionnaire survey looking at levels of parental satisfaction with the Communication Clinic report, which you will have received regarding your child within the last 12 months. I am contacting you as you have been identified as one of the parents who have attended the Communication Clinic with your child within the last 12 months. This study has received formal approval from the South London and Maudsley NHS Trust Research and Development Department.

Your opinion is highly valued by the team at Kaleidoscope, and I am hoping to gain feedback from parents regarding their experiences with the Communication Clinic report in order to make the information clearer and accessible for future families who will come in contact with the clinic.

As part of the design of this survey, I am hoping to complete a small number of 'pilot' questionnaires. Should you agree, this will involve me calling you at a time convenient for you and going through the questionnaire over the telephone. This should take no more than 15-20 minutes of your time. This 'pilot' process is to make sure that the questionnaire is as clear as possible, so on the telephone whilst going through the questionnaire together, I would very much appreciate any feedback you have on your experience of completing it. I have included the original clinic report for your reference.

Should you choose to take part in the pilot study, your details will remain confidential. I would only use your opinions in the survey; therefore you will not be identifiable from the responses that you provide. Your participation is entirely voluntary and should you choose to take part, or to decline, your ongoing support from this, or other services, will not be affected.

I would appreciate it very much if you could complete the reply slip at the bottom of the following page, indicating your consent to take part in the pilot study and if you could also provide a contact telephone number.

Please complete and return the reply slip within 14 days of receiving this letter.

Once I have received your consent, by completion of the form below and postage back to me (in the enclosed, pre-paid envelope), I will post out the questionnaire to you and will then call you at a time that you specified would be most convenient for you, to complete the questionnaire over the telephone.

Should you have any questions, please do not hesitate to contact me on the telephone number at the start of the letter.

Thank you very much for your time.

Yours sincerely,

Lizzy Banwell
(Trainee Clinical Psychologist)

Kitty Kwan
(Clinical Psychologist)

Consent Form: Pilot Study

Child's name: ……

Child's Date of Birth: …….

I (please write your name) ……
have read the information above and been given the opportunity to ask any questions that I may have about the survey. I understand that my responses will be confidential and the care my child receives from services will not be affected by my responses given in the survey.

Please tick:

1. **I agree to take part in the pilot survey and to being contacted by telephone to complete the survey** ☐
2. **I agree to take part in the main survey, not the pilot, and not be contacted by telephone** ☐
3. **I do not wish to complete either phase of the survey** ☐

My address is:
……

……
(this will be the address the questionnaire will be sent to)

My contact telephone number is:
……

The best time to contact me is between: …….. and ……

Signature ……

Date: ……..

PLEASE ENSURE THAT YOU HAVE SIGNED AND DATED THIS FORM

Thank you very much for your time.

7.3 Appendix III

Main Stage Information Sheet and Consent Form

South London and Maudsley NHS
NHS Foundation Trust

Addiction Sciences Building
4 Windsor Walk
Institute of Psychiatry
Denmark Hill
SE5 8AF
Telephone 0207 848 0733

25th November 2010

Dear Sir/Madam,

I am a Trainee Clinical Psychologist working with Kitty Kwan (Principal Clinical Psychologist, and Manager of the Neurodevelopmental Team, Kaleidoscope) and in consultation with Dr Morgan and Dr O'Sullivan, based at the Kaleidoscope Centre for Children and Young People.

It has been highlighted by Dr's Morgan and O'Sullivan that a review of parental satisfaction with the Communication Clinic report would be very valuable in making sure a high standard of clinical care is achieved through the clinic. We are hoping to uncover ways we can revise the report to make the information included in it more accessible and understandable.

To achieve this, I am conducting a postal questionnaire survey looking at levels of parental satisfaction with the Communication Clinic report, which you will have received regarding your child within the last 12 months. I am contacting you as you have been identified as one of the parents who have attended the Communication Clinic with your child within the last 12 months. This study has received formal approval from the South London and Maudsley NHS Trust Research and Development Department.

Your opinion is highly valued by the team at Kaleidoscope, and I am hoping to gain feedback from parents regarding their experiences with the Communication Clinic report in order to make the information clearer and accessible for future families who will come in contact with the clinic.

The questionnaire used in the study has been developed in consultation with the above mentioned professionals and has gone through a 'pilot' phase. This is where the questionnaire has been trialled on a small number of participants to ensure it is straightforward to complete

Should you choose to take part, your details will remain confidential and I would only use your opinions in the survey, therefore you will not be identifiable from the responses you provide. Your participation is entirely voluntary and should you choose to take part, or to decline, your ongoing support from this, or other services, will not be affected.

The full, self-administered questionnaire should take no more than 15-20 minutes of your time to complete.

I would appreciate it very much if you could complete the consent form at the bottom of the following page, indicating your consent to take part and to also provide a contact telephone number.

I have also enclosed the questionnaire itself. Should you wish to take part, please ensure that you complete this questionnaire in full and send it back to me, with the consent form, in the enclosed envelope.

Should you have any questions, please do not hesitate to contact me on the telephone number at the start of the letter.

Thank you very much for your time.

Yours sincerely,

Lizzy Banwell
(Trainee Clinical Psychologist)

Kitty Kwan
(Clinical Psychologist)

Consent Form: Main Study

Child's name: ……

Child's Date of Birth: …….

I (please write your name) ……
have read the information above and been given the opportunity to ask any questions that I may have about the survey. I understand that my responses will be confidential and the care my child receives from services will not be affected by my responses given in the survey.

Please tick:

3. **I agree to take part in the survey** ☐
4. **I agree to take part in the survey and would like to be contacted by telephone for assistance in completing the survey** ☐

3. **I do not wish to take part in the survey** ☐

My address is:
……

……
(this will be the address the questionnaire will be sent to)

My contact telephone number is:
……

The best time to contact me is between: …….. and ……

Signature ……

Date: ……

PLEASE ENSURE THAT YOU HAVE SIGNED AND DATED THIS FORM

Thank you very much for your time.

7.4 Appendix IV

Survey

Parental Satisfaction Questionnaire
Communication Clinic Report

Your child attended a Communication Clinic appointment in the last 12 months. We would like to ask you the following questions about that experience and the report that you received.

Please read and complete the questions below.
Your answers will remain anonymous.

- **Age of your child (years): ……**

- **My child attends (please tick): Mainstream school ☐**
  Special School ☐

- **Please tick the most appropriate:**

My child has a Statement of Special Educational Needs ☐
I am in the process of requesting a Statement ☐
I requested a Statement, but the application was rejected ☐

- **Is your first language English? (Please tick) Yes ☐ No ☐**

If 'No', what is your first language? (Please specify) ……

My child was diagnosed with Autism Spectrum Disorder after attending the Communication Clinic Yes ☐ No ☐

Unless otherwise specified, please tick the appropriate box to indicate your answer

The questionnaire starts on the following page

Section 1: Background and Family Information

1. The information included about my child and family's background information was, to the best of my knowledge, correct

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

2. I felt that it was appropriate for the family history information that I gave in the Communication Clinic to be included in this report

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

If answered disagree, or strongly disagree to Question 2, please state reasons:

Section 2: Language

3. The language used in the report was too technical and hard to understand

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

4. Did you need help to read through the report? Yes ☐ No ☐

If 'Yes' was this help from:

A relative ☐
A friend ☐
A health professional ☐
A teacher ☐
Other (please specify) ……

- **Please go to Question 5 if English is not your first language. If English is your first language, please move on to Question 6.**

5. a) was the report translated in to your first language?

Yes ☐ No ☐

b) If you answered "no" to 5.a, were you offered the opportunity for the report to be translated?

Yes ☐ No ☐ Don't know ☐

c) If you answered "no" to 5.a, would you have liked the report to be translated?

Yes ☐ No ☐

Section 3: Structure

6. I was happy with the overall length of the report

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

If you answered disagree, or strongly disagree to Question 6, please state reasons:

7. The subheadings used in the report were easy to understand

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

8. I found the different sections of the report easy to follow

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

9. Do you have any suggestions for how the sections of the report could be arranged differently to make it easier to follow? If so, please specify below:

Section 4: Management Plan and Distribution List

10. Were you clear what was going to happen next in terms of plans to help support your child?

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

11. If there was no specific diagnosis made, was this explanation made clear to you in the report?

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ Not Applicable (Diagnosis made) ☐

12. I was pleased with the services that I, and my child, were referred to for further information and support

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

If 'Disagree' or 'Strongly Disagree', please specify below:

13. I agreed with and was happy for the report to be sent to all those included on the distribution list

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

Section 5: Information Pack

14. I received an information pack with additional information at the Communication Clinic (if "no", please go to Question 17)

Yes ☐ No ☐ Not Applicable ☐

15. The information pack was useful for my child and family

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

In what way was the information in the pack useful, or not useful? (Please describe below):

16. Is there any additional information you would like included in the information pack?

Yes ☐ No ☐ Don't Know ☐

If "yes", please give details:

Section 6: General Comments

17. The information in the report accurately reflected my child's strengths and difficulties

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

18. I understood the meaning of the diagnosis from the report and how it applied to my child's difficulties

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐ Not Applicable (No diagnosis made) ☐

19. The report was useful in explaining my child's difficulties to his/her school

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

20. The report was useful in getting support

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

21. a) Overall, the information in the report was accurate

Strongly Agree ☐ Agree ☐ Disagree ☐ Strongly Disagree ☐

b) If answered 'Disagree' or 'Strongly Disagree' to Question 21(a), please describe reasons in the box at the top of the following page:

22. In your opinion, what was the best feature of the report, please describe below

23. In your opinion, what would be a useful improvement to the report, please describe below

Thank-you very much for taking the time to complete this questionnaire; your answers will be greatly appreciated.

Please return to Lizzy Banwell (Trainee Clinical Psychologist) in the enclosed, pre-paid self addressed envelope.